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# A formative evaluation of the Methods in psychology course at the University of Massachusetts, Amherst.

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# A FORMATIVE EVALUATION OF THE METHODS IN PSYCHOLOGY COURSE AT THE UNIVERSITY OF MASSACHUSETTS, AMHERST

A Thesis Presented

by

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# CHAPTER 1

# INTRODUCTION

## Purpose

The purpose of this project was to evaluate the current curriculum of Methods of Inquiry in Psychology (Psych 241) and suggest course improvements based on this evaluation in conjunction with relevant literature. Survey techniques were employed to evaluate the course from the perspectives of Psychology students and Psychology faculty. The surveys assessed perceived and ideal goals for this course, feelings about the current curriculum, and suggestions for improvements. In addition, a materials survey was used to assess the effectiveness of current course materials. Data analysis pointed to discrepancies between ideal and real goals. Once discrepancies were uncovered, methods for reconciling ideal goals and curriculum were discussed.

## Rationale

Motivation for undertaking this project stems from personal involvement with the course. While

serving as Teaching Assistant (TA) and Coordinating TA, I came to believe that Methods of Inquiry in Psychology (Methods) is crucial to the education of our undergraduate psychology students, because this course offers students their first experience with primary sources and possibly their sole hands-on research experience.

Although this course greatly benefits students, the effect comes at a high price to the department and the graduate students that staff the course. Methods is the most labor-intensive course that the department offers, and the teaching load for Methods' TA's is heavier by far than any other teaching assignment. Graduate students who teach this course have formally voiced their dissatisfaction with the teaching load via a written communication to the undergraduate affairs committee (Woods, personal communication, May 5,1987) and have suggested improvements, including restricting lab size to 15 students. In the last several years, the course has been partially staffed by graduate students outside the Psychology Department (and in some cases by non-students) because Psychology graduate students cannot commit the time and energy necessary to teach this course. Often, graduate advisors lobby against the assignment of their

graduate students to the course because of the time required to teach this course. Because the administrative work associated with this course is so great, a coordinating teaching assistant position was created.

Generally, this devotion of resources and dedication to the course is not reflected in student appreciation or course evaluations. Students commonly complain that lab and lecture materials do not relate to each other and that lab sections are not equivalent or fair. Complaints about lack of cohesiveness between lab and lecture course components are partially the result of the structure of the course: While lab requirements remain relatively consistent from year to year, several professors with variable teaching styles and course objectives rotate responsibility for teaching the lecture section each year. The complaints about non-equivalent lab sections are probably the result of different amounts of teaching experience and familiarity with course materials among TA's. Although weekly TA meetings were established to address this problem, more attention is warranted. The best ways to remedy these problems are not clear.

Although ways to improve the course are discussed each semester, no systematic evaluation of curriculum changes has occurred. While students are issued

evaluation forms at the end of the semester, these evaluations do not address important issues such as goals of the course or effectiveness of specific course materials. Instead, they serve as pointers to indicate general areas of dissatisfaction with the course. Clearly, more information is needed.

In addition to problems that already exist, the current fiscal situation has created a crisis concerning this course. The department cannot continue to support the current level of resources for this course; therefore it will be impossible to teach the course as it is currently taught. If student enrollment in Methods remains at present levels, the course will have to be restructured. I believe this process should start with systematic evaluation of the current course. We should establish clear goals and evaluate which course materials work and which need revision. Then we should determine how this information can be used to establish an effective system of instruction given the limitations of resources.

## Historical Review

Guidelines for curriculum evaluation from the literature can be applied to this process. Formative

evaluation, as described by Scriven (1967) seems appropriate. Formative evaluation refers to ongoing evaluation of the current curriculum that will lead to changes, or a final course revision. Implicit in this type of evaluation is the idea that there is dissatisfaction with the current curriculum on some level. This dissatisfaction motivates the evaluation to uncover or formulate a set of testable criteria for the course.

Chew Tow Yow (1977) suggests that analysis begins with an evaluation of instructional objectives. The aim is to determine if instructional objectives are in line with overall departmental or program objectives, clearly stated, appropriate for--and attainable by--the students, and important enough to encourage further learning by the students in the next level of the program.

During formative evaluation, it is necessary to determine if the current curriculum meets the objectives. Most formative evaluation advocates hold similar opinions about what one needs to know to effectively evaluate a curriculum. These are clearly stated by Scriven. He contends that one needs to know about the match between (1) goals and course content, (2) goals and exam content, (3) course content and exam content. He also advocates analysis of the

results of student exams to identify shortcomings of comprehension, shortages of essential facts, or lack of practice in basic skills.

This evaluation can take several forms, and evidence can be gathered from several sources. For example, Scriven differentiates between intrinsic evaluation, which he defines as the evaluation of the instrument itself (content, goals, grading procedures, teacher attitude), and pay-off evaluation, in which the effect of the instrument on the pupil is evaluated. He suggests a combination of these two approaches. Sanders and Cunningham (1973) suggest that information from both internal and external sources be included in the evaluation. Information from an internal source might include a course rationale offered by a curriculum committee; information from an external source could include empirical data gathered from teachers and students. Analysis of information from these sources would reveal internal inconsistencies of the curriculum without making judgments about the merit of the curriculum goals (Gordon, 1967; in Ben-Peretz).

Bloom (1971, 1977) further differentiates the types of evidence that would be useful to obtain during formative evaluation. He suggests that judgmental data can be gathered from both internal and external

sources that will yield opinions, judgments and reactions to specific curriculum materials. This type of datum is gathered through surveys of curriculum committees, students and teachers. He also agrees with Scriven that assessment of what is actually being learned under the current curriculum would be valuable, but acknowledges the difficulty of obtaining such information.

Recently, Walker, Newcomb and Warren (1987) successfully employed a formative evaluation approach to the curriculum of the Psychology Department at the University of Richmond. They identified three phases of the evaluation. The first phase examined the curricular expectations of the university, identified the ideal knowledge/skill base desired in post-baccalaureate settings, and compared curricula at peer institutions. In the second phase, this information was synthesized and distilled into a new structural model with clear goals and expectations for the curriculum. The final phase organized individual courses around these goals and expectations.

While Walker et al. tackled the curriculum of the entire department, the scope of this project was limited. Specifically, the focus was placed on uncovering course goals and assessing the match between the ideal goals and the course content.

Recommendations for changes in course curriculum were offered in light of the results of this research while incorporating solutions from the literature.

To accomplish these goals, survey techniques were used. First, the Faculty of the Psychology Department were surveyed to get their opinions about what the goals of Methods are and what they should be. Their responses were compared to the student's perceived course goals. This information was summarized and discrepancies in opinion are noted.

Next, surveys of specific course materials were evaluated to determine which course materials are effective. Bloom's guidelines (1977) were incorporated in survey construction. Students were asked to assess themselves to determine what was learned and which materials were most effective.

Finally, the match between goals and materials was determined. This pointed to strengths and weaknesses in the current curriculum and established a framework for restructuring the course.

# CHAPTER 2

# METHOD

## Course Description

A description of the 1991 Methods in Psychology course is offered to give readers an overview of course content. The Methods in Psychology course was divided into lecture and laboratory components. The lecture component was concerned with teaching scientific method as applied to psychological research. Emphasis was placed on principles of research design, especially the formulation of answerable research questions, development of experimental controls, and appropriate use and interpretation of statistical analysis.

While theory was emphasized in lecture, application of theory was explored in the laboratory component. Students completed four research projects in which they designed and conducted experiments, analyzed data, interpreted results and wrote research papers in the American Psychological Association (APA) style. The use of concrete research projects was intended to help students grasp the theoretical

concepts of lecture. Research paradigms included Naturalistic Observation, Survey Research, and Factorial Design, as well as an Independent Student Project. The variety of designs was included to give students a sample of research methods.

## Materials

Three surveys were created to evaluate the Methods in Psychology course: the Student Survey, the Faculty Survey, and the Materials Survey. All surveys are appended. Student and faculty surveys contain several parallel sections to facilitate comparisons between the groups. The Materials Survey was created to assess student perceptions of the effectiveness of specific lecture and lab materials.

### The Student Survey

The survey was divided into nine sections, each of which assessed various aspects of the Methods in Psychology course. The first section assessed opinions about what should be taught in the lab and lecture sections of the course. Sixty-seven aspects of the course were assigned priority ratings on a 4 point Likert scale. Course aspects were ranked from

"High Priority" (4) to "Low Priority" (1). The aspects were loosely grouped into the following categories: Theory of Scientific Method; Critical Reading and Thinking; Applied Experimental Design; Statistical Analysis and Computers; Written Communication; and Generalization of Knowledge. Respondents who wished to add additional aspects were directed to the final page of the survey where lecture and lab scales were provided.

The second section assessed the relative importance of teaching different methodologies. Nine methodologies were listed, and respondents rated the importance of covering each method. Responses were rated on a 4-point scale from "Should Be Covered" (1) to "Not Important for This Class" (3) with the fourth response category "I Don't Know What This Is." Methodologies included some that are currently used in the course, such as Naturalistic Observation, Survey, and Group Design, as well as some methods not currently used (Interview Techniques, Single Subject Design). Respondents who wished to include other methodologies were directed to the last page of the survey where space and scales were provided.

The third section asked students to rate the relevance of the course material for their future. They responded to five items covering areas such as Job Placement and Future Career on a 3-point scale

from "Very Relevant" (1) to "Not Relevant" (3). In addition, students were asked to use this scale to rate the relevance of the course in the development of seven specific skills, such as written communication skills and computer skills.

The fourth section rated attitudes and feelings about the course on eight, 5-point semantic differential scales. Students were asked to rate their feelings on scales from "Unchallenged" to Challenged," "Positive" to "Negative" "Terrified" to "Self-Assured". This section was included because, although most faculty involved with the course have a sense that students have negative feelings about the course, these feelings have never been documented.

The fifth section of the survey assessed current skills and knowledge on the same 67 aspects of the course listed in Section One. Students rated their skill/knowledge level on a 5-point scale from "Excellent" (5) to "Poor" (1).

The sixth section of the survey required that students put six topics of the course in rank order of importance from "Most Important" (1) to "Least Important." Topic areas were: Theory of Experimental Design and Scientific Method; Critical Reading and Thinking; Applied Experimental Design; Statistical

Analysis and Computers; Written Communication; and Generalization of Knowledge and Skills.

The seventh section of the survey contained three open-ended items, allowing students to create their own responses to the following questions: "When I think of taking this course, I feel _____." "When I think about using a computer, I feel _____." "When I think of doing statistics, I feel _____." These items were included to allow students to voice individual opinions, to document these opinions, and to see if these opinions change over the course. Also, these items were included to document feelings that are commonly known but had not been systematically assessed.

The eighth section of the survey was the opinion forum where open-ended questions about the course were asked. Questions were included on future directions of the course, hands-on versus conceptual work, and the integration of the Methods and the Statistics courses. Two questions included 5-point rating scales from "Very Positive" to "Very negative," in addition to space for open-ended comments.

The ninth section of the survey contained demographic items on GPA, psychology courses taken, SAT scores, statistics grade, and gender.

## The Faculty Survey

The Faculty Survey was similar to the student survey but contained fewer sections. Parts One through Four used a fixed-choice format. Part One was identical to the Student Survey; 67 aspects of the course were listed, and respondents were asked to rate the priority of each for lab and lecture. Part Two was similar to the Student Survey and asked respondents to indicate the priority of specific methodologies. Part Two of the Faculty Survey did not offer option 4 on the response scale ("I Don't Know What This Is"). Part Three was identical to the Student Survey and asked the respondent to rate the relevance of the course for students' futures, and the role of the course for the development of skills and knowledge. Part Four was identical to Part Six of the Student Survey and required that respondents rank the importance of the six content areas of the course.

Parts Five through Seven used an open-ended question format. Part Five asked faculty to complete the following sentence: "When I think about teaching Methods, I feel _____." This corresponded to part Seven of the Student Survey. Part Six consisted of 11 open-ended opinion questions. All opinion questions from

the Student Survey were asked on the Faculty Survey. In addition, questions were asked about perceived goals of the course and the ideal skills/knowledge students should have when the course is completed. Part Seven consisted of four demographic questions about background in psychology and experience teaching Methods and Statistics. The final page of the survey had space for additions to sections one and two.

## The Materials Survey

An eight section survey was created to assess the effectiveness of course materials. Sections of the survey addressed lecture material, homework, library work, each lab project and general lab materials. Survey questions followed the format that Bloom (1977) recommended. Open-ended and fixed-choice question formats were used.

Each section had questions that addressed difficulty level and comprehension of the material, and asked for suggested improvements. In addition, each section focused on elements unique to specific materials. The Lecture section contained 13 items on lecture format, exams, and use of examples in lecture. The Homework section contained 24 items. Each homework assignment was individually addressed to

assess clarity and usefulness of materials. Attitudes about computer work were also assessed. The Library section asked 17 questions about library usage and the usefulness of library skills.

Separate sections were created for Naturalistic Observation, Survey, and Group Design Lab Projects. The questions were identical for each section, except that questions about specific statistical procedures were tailored to the individual projects. Twenty-five questions, including content on presentation of information, statistical analysis, write-up, and generalization of knowledge, were asked in each section.

Last, 22 questions about general lab issues were asked. Included were questions concerning the amount of time spent in lab sections, attendance, attitude toward lab, and opinions about what could be eliminated from the lab experience.

## Subjects

Respondents were recruited from two groups at the University of Massachusetts: psychology students and psychology faculty. Students enrolled in the Spring, 1991 Methods in Psychology course were issued surveys as part of the course requirements. They received 10

points for every survey completed (30 possible points). All Psychology faculty members were also issued surveys.

## Procedure

Student surveys were distributed twice during the Spring, 1991 semester, as pre-test and post-test measures. The Initial Student Survey was distributed in lecture two weeks after lecture had begun. Students were asked to fill out the surveys and return them within one week. They were instructed to include their student number on the Opscan sheets and survey booklets. The Final Student Survey was distributed two weeks prior to the end of class. Materials surveys were distributed after the third lab reports had been returned to the students so that information about survey project grades could be included. This occurred in the last week in April, 1991.

Faculty surveys were distributed early in May, 1991. Faculty surveys were placed in Psychology Department mailboxes.

# CHAPTER 3

# RESULTS

## Course Goals

### Data Transformation

To make analyses manageable, data from section one of the Initial Student, Final Student and Faculty Surveys were transformed in the following way. Priority ratings of items pertaining to a topic area were summed and averaged over the number of items to yield an average priority rating for each topic area. The topic areas--divided into lab and lecture components-- are as follows: Theory of Experimental Design and Scientific Method; Critical Reading and Thinking; Applied Experimental Design; Statistics and Computers; Written Communication; and Generalization. See pp. 151-163 of Appendix B, Tables B.1- B.7, for lists of items comprising each topic area and item averages from Initial Student, Final Student and Faculty Surveys. All items were rated on a scale from "High Priority" to "Low priority."

Analyses were conducted in three areas: Initial and Final Student Survey responses were compared for

six topic areas, Final Student and Faculty Survey responses were compared on six topic areas, and rank priority order of topic areas was compared for Final Student and Faculty Survey.

## Comparison of Part I of Initial and Final Student Surveys

Half of approximately 130 students completed both the Initial and Final Student Surveys and served as subjects in this analysis. Section One of the Initial and Final Student Surveys was analyzed using a within-subjects MANOVA. The overall MANOVA was significant [$F(11, 737)= 67.24$, $p< .001$]. More importantly, priority ratings of topic areas significantly changed from the beginning to the end of the course [$F(1, 67)= 5.10$, $p< .05$]. Additionally, there was a significant Topic Area by Time interaction [$F(11, 737)= 4.38$, $p< .001$]. Specific ANOVA's were conducted to determine where priority ratings differed. F-ratios and means for ANOVA's are given in Table 1.

### Lab Component

The priority of most topic areas for lab was unchanged from pre-course to post-course surveys. The

exception was Statistics and Computers, which showed a marginally significant increase in priority within the moderately high priority range. Applied Experimental Design and Written Communication both remained high priorities for lab. The priority of Critical Reading and Thinking remained moderately high, as did the priority of Generalization and Theory of Experimental Design.

Lecture Component

The relative stability of priority ratings for lab contrasted sharply with the shift in priority for topic areas in lecture. Final Student Surveys showed a significant drop in priority for four topic areas in lecture, with a marginally significant drop in a fifth. Three topic areas showed substantial drops: Priority for Critical Reading and Thinking dropped from moderately high to moderately low, as did Applied Experimental Design and Written Communication. Priority for Generalization significantly decreased within the moderately high priority range. Priority ratings of Theory of Experimental Design and Scientific Method marginally decreased within the moderately high range. Ratings for Statistics and Computers did not change from the moderately high priority range.

In summary, Final Student priority ratings of topic areas significantly decreased for five of six topic areas for lecture, while Initial and Final priority ratings for topic areas in lab were mostly unchanged. The exceptions were Theory, which marginally decreased in priority for lab, and Statistics and Computers, which significantly increased in priority for lab. Note that while two topic areas were considered high priorities for lab, no topic areas were rated as high priorities in lecture. Also, the lowest priority rating for lab was moderately high, while the lowest rating for lecture was moderately low.

## Comparisons of Part I of Faculty and Final Student Surveys

Each topic area of section one of the Final Student Survey was compared to the Faculty Survey using a between-subjects MANOVA, to see if these groups differed on the priority ratings that the topic areas received. Although no overall effect of Group was found, there was a significant Group by Topic Area interaction [$F(11, 1210) = 5.64$, $p < .001$]. Therefore, one-way between subjects ANOVA's were run to investigate the

interaction and determine where priority ratings differed.

Data were analyzed from 91 students who completed the Student Survey and 21 faculty members who completed the Faculty Survey. Table 2 contains F-ratios and means for topic areas in lab and lecture. In addition, the Instructor's responses were given as a separate category so that his intended focus could be compared with faculty and student responses. Instructor data were not included as a separate category in analysis.

Lab Component

For lab, students rated topic areas as having higher priorities than did faculty. Faculty gave significantly lower priority ratings than students did for three of six topic areas and marginally lower priority ratings for a fourth area. Student responses ranged from "High Priority" to "Moderately High Priority," while faculty responses were all in the moderately high priority range. Students gave Statistics and Computers, as well as Critical Reading and Thinking, significantly higher lab ratings than faculty did, within the moderately high priority range. Students rated Generalization as moderately high, but faculty rated it as slightly lower, within the moderately high priority range. This difference

was also significant. A marginally significant difference was obtained when students rated Applied Experimental Design as "High priority," while faculty rated the priority as moderately high. No differences between faculty and student ratings of Written Communication and Theory of Experimental Design were found: Both topic areas were rated in the moderately high priority range.

Lecture Component

Trends were reversed for the lecture component. The only cases of faculty giving higher priority ratings than students occurred here. Faculty rated two topic areas as higher priority than students did but otherwise agreed with students on the priority ratings. Faculty rated Theory of Experimental Design as a higher priority in lecture than did students, within the moderately high priority range. Critical Reading and Thinking was rated as moderately high priority by faculty but as moderately low priority by students. Students and faculty rated Generalization as moderately high priority for lecture, as they did for Statistics and Computers. Students and faculty agreed that Applied Experimental Design and Written Communication should receive moderately low priority in lecture.

In summary, students and faculty differed in opinion about the priority of topics within lecture and lab. Students rated topic areas in lab as higher priority than did faculty. The reverse was true for faculty; faculty rated a few topic areas in lecture as higher priority than students did.

## Rank Order

To directly assess the hierarchy of course priorities, students and faculty were asked to rank the priority of the six topic areas without regard for lab or lecture components. Median frequency scores were used to determined rank order of topic areas. Faculty and student rank orders can be seen in Table 3.

It is interesting to note that while students and faculty agreed on the lowest priority item, they did not agree on the highest priority items. Students ranked applied elements highly, while faculty ranked theory as top priority. These findings fit well with the above priority ratings when broken into lab and lecture components.

## Attained Skills and Knowledge

An attempt was made to assess student knowledge and skills relevant to this course, and self report was used exclusively. Given the complexity of the task, the measure used here is admittedly crude. Nevertheless, the attempt at assessment was made because these issues are central to curriculum development. First, an attempt was made to determine if students were learning from their experience in the course, and then questions were targeted to specific materials to determine which were most effective at fostering learning. To address this question, results from Section Five of the Initial and Final student Surveys were compared. The data of 68 (out of approximately 130) students who responded to both the Initial and Final Student Surveys were used in this analysis.

Students were asked to realistically rate their skills or knowledge on 36 items in six topic areas (as in Section One) and in two other areas: Time Management and Organization, and Preparation for Future Careers (items from section V that were averaged to create the topic areas are noted in Appendix B, pp. 168-174, Tables B.12-B.19). Items in this section were rated on a five-point scale from "Excellent" to "Poor." Initially, an overall within-

subjects MANOVA was run on the data to determine if any differences in ratings existed. MANOVA results were significant for Topic Area [$F(7, 469)= 10.77$, $p< .001$], Time [$F(1, 67)= 19.81$, $p< .001$], and Topic Area by Time interaction [$F(7, 469)= 9.99$, $p< .001$]. One-way within-subject ANOVA's were run on each of eight topic areas to determine how self-reported skill or knowledge levels differed on Initial and Final Student Surveys.

Students rated their skills and knowledge significantly higher after completing the course in all topic areas except two: Time management and Organization and Preparation for Future Careers. See Table 4 for F-ratios and Means. Students rated their skills and knowledge of Theory of Experimental Design as significantly increased within the Good category, as they did for Critical Reading and Thinking, Statistics and Computers, and Written Communication. The most dramatic self-reported improvements came in the areas of Applied Experimental Design, where students improved from fair to good. Students reported only a marginally significant improvement in Generalization Skills within the Good range.

It should be noted that Time Management and Organization; and Preparation for Future Careers were not explicitly taught in the curriculum, and gains

were not expected in these areas. Students rated their skills in these two areas as good.

These findings indicate that students acquired skills and knowledge from their experiences in this course. The exact nature of the acquisitions were illuminated by student responses on the Materials Survey.

## Materials Survey

Due to a typographical error in the Materials Survey, two items were identically numbered. Student reaction mainly took one of two forms: The majority of students skipped the second identically numbered item and proceeded with the remaining items, but approximately 20 students re-numbered the remaining items to compensate for the error. In order to join the data from both groups, the second identically numbered item was deleted from the data set of the 20 students who re-numbered their survey questions. Students were included in the sample only if they took either of these courses of action.

Ninety-eight students responded to the Materials Survey. The survey is organized into sections that correspond with different course components. Data from the Materials Survey are described below.

## Lecture

As can be seen in Table 5, mean student opinion fell between agree and disagree on all items. When students were asked about lecture, they responded with ambivalence. Since most responses fell in the agree or disagree categories, percentages of responses of strongly agree and strongly disagree have been combined with percentages of responses of agree and disagree, respectively, to facilitate discussion. Note that categories remain distinct in the table.

Although 63% of students reported that they knew what was expected of them and 71% believed that important concepts were emphasized in lecture, most students (65%) found the lecture material difficult. By itself, this finding is not surprising; Methods is a notoriously difficult course. But other responses indicate that students were ambivalent about the presentation of the material. Means fell between agree and disagree on items that asked if lecture was easy to understand and if lectures were clearly presented. This represents a different issue than difficulty level of material; this suggests that difficult material is not being optimally presented.

Questions about the quality of examples also give evidence of ambivalence toward presentation of material. Sixty percent of student respondents agreed

that clear examples were used to illustrate concepts and 59% believed that the examples helped them to understand the lecture concepts. Forty-eight percent of students felt that about the right number of examples were used in lecture, 12% thought that too many examples were used, and 40% felt that not enough examples were used. In addition, only 52% of student respondents agreed that lecture concepts were illustrated in lab projects. This finding is importance because lab is an application of-- and therefore an example of--lecture concepts, and because it points to a lack of perceived connection between lecture and lab. Most students rated the book as "Adequate" (58%) or "Excellent" (10%)

Questions were also asked about exam structure and content. Although most students (62%) reported that the example midterm exam helped to illustrate what was expected on the midterm exam and review of the example probably improved their score on the midterm (63%), only 33% of students believed the midterm was a fair exam. Nineteen students wrote comments on this question. About 25% of the comments referred to the exam as fair but hard, while 75% of the comments revealed that one particular essay question was perceived as unfair because it was not representative of the material covered in the course.

In addition, several students believed the multiple choice questions were too specific. See Appendix C, p. 176 for verbatim comments.

In an open-ended question, students were asked to suggest ways to improve the lecture . Fifty-two comments were recorded. The majority of the comments (42%) referred to the examples used to illustrate the lecture content. It appeared from these comments that examples were useful but could have been made even more useful. Specifically, students felt that there should be more simple and clear examples that students could relate to, rather than a few long complicated examples. Some students suggested that examples be taken from actual studies. The next most frequent suggestion (33%) stressed the importance of integrating the lecture, lab and readings. Students felt that lecture should clarify lab topics or that there should be more of a balance of material presented in lecture and lab. Many students suggested that the text outline be followed so students could use the text to clarify difficult lecture material. A few students (8%) made practical suggestions, such as using handouts of lecture outlines and statistic formulas, and assigning more homework related to lecture and reviewing it to clarify lecture and lab concepts. The remaining students (15%) made suggestions such as dispensing with lecture,

increasing the point value for lecture activities as an incentive, increasing lecture meetings from 2 to 3, or teaching lecture in smaller sections. See Appendix C, pp. 176-177, for verbatim comments.

To summarize, most students found lecture material difficult to understand, and many students were not satisfied with the presentation of difficult lecture material. Students suggested improving lecture by improving the quality of examples and making the connection between lecture, lab and readings explicit.

## Homework

Questions were asked to identify the role of homework in the course. Students agreed that homework assignments helped them understand statistics used in lab reports and that homework also taught computer usage. Almost all students (92%) were glad for the chance to use computers in this course, although 44% of student respondents reported that even with the handouts, they were confused with computer use. Even though computer use confused some students, 81% thought computer use should continue to be required for the course. See Table 6 for responses to questions about the role of homework.

It is clear that homework played a much greater role in lab than in lecture. Students reported that homework assignments did not help them to understand the lecture material. Since the homework assignments were designed to teach statistical concepts and computer use, this is not surprising. However, 74% of student respondents agreed that there should be more homework directly related to lecture concepts. Although students called for more homework related to lecture, 78% felt that the amount of homework currently assigned was about the right amount.

Students were asked to rate the quality of individual homework assignments and associated handouts. The frequency of responses can be seen in Tables 7 through 10. Students rated the homework and related handouts as clear, helpful, and about the right difficulty level. In addition, most students understood the homework problems. Over 80% of students favorably rated even the most difficult homework assignment.

Fifteen students offered comments on the homework. The majority of comments referred to the homework assignments and computer usage as important and helpful in understanding the lab concepts. Several comments related the experience of not comprehending the assignments at first, but mastering the homework and understanding the concepts in the

end. About a third of the students commented that there should be more computer time available and stressed that time restrictions created by the small number of computers were the most frustrating part of homework. One-fifth of comments were related to specific problems that students encountered, such as understanding computer printouts and statistical terms. See p. 178 of Appendix C for verbatim student comments.

## Library

Table 11 displays frequencies of responses to questions about library usage. Early in the course, students attended workshops with librarians who taught them how to use various reference materials including Psychological Abstracts and Silver Platter, a computer data base of psychology references. Students found library training to be worthwhile and valuable for this course as well as their general education. They cited frustration with the mechanics of library research, but seemed to understand the process. Students seemed satisfied with the amount of information they learned about library research.

To get a frame of reference, questions were asked about the level of library experience upon entering

the course. Prior to this course, 10% of student respondents reported using reference material in the library all the time, 38% often used the material, 36% seldom used the material and 16% had never used the library reference material. Fifty-nine percent had used primary sources in prior course work.

Although it appears that about half of our students had experience with reference materials, most students (72%) rated the lecture on library sources as helpful. When asked to rate their confidence in their library skills after completing our course, 37% were confident, 35% were somewhat confident, 13% were somewhat unconfident, and 15% were not confident. Seventy-three percent of student respondents felt that future students should use the library as they had, 10% said no, and 17% were unsure. In addition, most students felt that they would apply these library skills to other courses (31% strongly agreed, 53% agreed).

These findings fit well with the responses to an open-ended question on whether the library part of the course was worthwhile. Ninety-five students responded with comments. The majority of students (80%) felt the library was an invaluable part of the course, helpful with the research process, and responsible for increasing confidence. Twelve percent felt that the library assignments were not worthwhile because they

were too time consuming, and some believed they should be optional. The remaining students 8% were neutral (e.g. it's OK, Somewhat worthwhile). See p. 179 of Appendix C for verbatim student comments.

Students were also asked what they considered the most difficult part of library research. Seventy-nine students responded. Finding relevant articles for lab reports was most difficult for 28% of respondents. Computer usage, especially Silver Platter, was most difficult for 28% of respondents. Finding key words to use in computer search, computer time limits and waiting to use Silver Platter were most frustrating. A quarter of the students felt that physically retrieving articles was most difficult, and students repeatedly cited missing journals or vandalized articles as sources of difficulty. Fifteen percent of students felt that the library work was time-consuming but not difficult, while the remaining students cited specific library resources such as psychological abstracts or ERIC as difficult to understand. See p. 179-180 Appendix C for verbatim student comments.

When asked what else students would have liked to learn about the library, 39 students responded. Forty-one percent wanted to know more about specific resources, most notably microfiche, but also cross referencing, inter-library loan, and different

indexes. About 39% of students thought they had learned enough and wanted to learn nothing more. About 20% wanted more emphasis on Silver Platter, more practice with exercises, or just more information in general. See p. 180-181 of Appendix C for verbatim student comments.

## Lab Reports

Specific questions were asked about the three standard lab projects to determine the effectiveness and clarity of each. Table 12 through Table 29 display the frequency of response for each question.

From Table 12 we see that the format of the labs was rated adequate by most students. The Naturalistic Observation Project received the highest rating (31% of students rated the format as excellent), and the Survey Lab received the lowest rating (28% of students rated the format as somewhat unclear, and 8% rated it as confusing). Although most students agreed that the goals of the lab projects were clear, about 25% of students disagreed with respect to the Survey and Group Design Lab Projects. In addition, over 30% of students disagreed when asked if they knew what was expected of them on the Naturalistic Observation and Survey Lab Projects (see Tables 13 and 14).

When asked about the difficulty level of the labs, 71% of student respondents rated the Naturalistic Observation Lab as "About Right." Most students rated the Survey as "Difficult" or "Too Difficult" (54% and 16%, respectively). Fifty-one percent of students rated the Group Design as "About Right" while 37% rated it as "Difficult." See Table 15 for all frequencies.

Students rated the calculation of the Chi-Square statistic used for the Naturalistic Observation Project as "Very Easy" to "Average." Range in opinion about the 1-way between-subjects ANOVA and 2-way mixed-design ANOVA was greater, but the question means indicate that calculations were of average difficulty. Although most students (73%) had calculated the Chi-Square statistic in the prerequisite statistics course, only 35% had calculated a 1-way between-subjects ANOVA and 21% had calculated a 2-way mixed-design ANOVA. See Tables 16 and 17 for frequencies.

When asked to rate how well the statistical interpretation for each lab project was explained by the TA, students gave the Naturalistic Observation the highest rating (20% rated it as excellent, 66% rated it as adequate). The explanation for the Survey Lab statistics received the lowest rating. Forty percent

of students rated it as somewhat unclear, and 9% rated it as confusing. See Table 18 for frequencies.

Students rated the presentation of the write-up for the labs as adequate, with the Naturalistic Observation Lab rated highest. See Table 19 for frequencies. Students rated the difficulty of the write-up of each lab project. All write-ups had mean scores that put them between average and difficult on the scale. Given that framework, the Naturalistic Observation Project was easiest to write up (55% rated it as average, and 21% rated it as difficult), and the Survey Lab was the most difficult to write up (25% rated it as average, 55% rated it as difficult). See Table 20 for frequencies. In addition, students were asked if they had problems writing specific sections of reports. About 50% of students had problems with the Abstracts and Introductions of all three reports. About 34% of students had problems with the Method section of the report. Students had the most problems with the Results section of the Survey Report (75%), while about 50% reported problems with the Results section of the Naturalistic Observation and Group Design Papers. Students reported a high percent of problems (around 70%) with the Discussion section of all reports. See Table 21 for frequencies and means.

Most students met with their TA to review a rough draft for all three reports, and many students (40-

50%) had 75-100% of their draft completed for the meetings. Of the students that met with their TA, most found the meetings "Very Helpful" or "Somewhat Helpful." Most students reported that the TA answered their questions clearly, although about 20% -25% disagreed. See Tables 22 through 25.

When it came to grading, most students strongly agreed or agreed that TA's made specific comments on their reports. Grades on reports steadily improved during the course, with 27% of students receiving a grade over 88% by the third lab report, and grades under 68% decreasing from 30% of students on the Naturalistic Observation to 10% on the Group Design Project. See Tables 26 and 27.

Students were asked two questions about the generalization of the knowledge gained through completing the lab projects. First, students were asked whether specific projects helped them to understand the general concepts for each design type. Ratings of general understanding fell over the three projects. Seventy-four percent of students reported that the Naturalistic Observation Project helped them with general concepts, 51% of students reported that the Survey Project helped them with general concepts, and only 32% reported that the Group Design helped them with general concepts. Similar results were

reported when students were asked to rate their confidence in their ability to apply the knowledge gained from the lab project to other projects requiring similar design. Students rated themselves as "Somewhat Confident" (52%) to "Confident" (33%) on Naturalistic Observation, "Somewhat Confident" (50%) to "Somewhat Unconfident" (26%) on Survey Design with similar results for the Group Design. See Tables 28 and 29 for frequencies and means.

For each project, students were asked three open-ended questions and were given space for additional comments. The first question asked what the students learned from the project. Seventy-one students responded for the Naturalistic Observation Project, 75 students responded for the Survey Project and 44 students responded for the Group Design Project. The majority of students (68%, 72%, and 86%, respectively) reported learning the fundamental elements of each type of design such as techniques of observation and data collection for Naturalistic Observation; Survey construction, sampling, and analysis for the Survey Project; and two-way mixed-design ANOVA's for the Group Design. Few students cited learning specific lab content such as attitude measurement (4% in the Survey Project), or memory theory (7% in Group Design). Twenty-five percent of students responded that they learned about write-up from the Naturalistic

Observation Project, 3% said the same for the Survey Project, while no comments were made with respect to the Group Design. Students reported learning about the library (9%) and statistics (7%) from the Survey Project. About 7% of the comments for all project types reflected complaints about TA's. See Appendix C pp. 182-183, 186-187, 191 for verbatim student comments.

Students then identified sources of confusion for each project. The number of students who responded are as follows: Naturalistic Observation, n = 48; Survey Project, n = 56; Group Design, n = 33. For Naturalistic Observation, 50% of students reported that nothing confused them at the completion of the project; 15% of students reported the same for the Group Design Project. The write-up was cited as a consistent source of confusion in all projects: 42%, 28%, and 15%, respectively. Students expressed confusion about what information goes into each part of the paper and reported difficulty with particular sections, especially the Abstract, the Results, and the Discussion Sections. Twenty-seven percent of students reported that elements of Survey design confused them, and 15% of students reported that the background article used for the Group Design confused them. Eighteen percent of students reported that the

statistics used for the Survey Project confused them, while 6% reported that the statistics for the Group Design confused them. Survey results interpretation was confusing for 27% of students, and Group Design results interpretation was confusing for 33% of students. Lastly, grading procedures confused students on the Naturalistic Observation and Group Design Papers: 8% and 6%, respectively. See Appendix C pp. 183-184, 187-188, 191-192, for verbatim student comments.

When asked what could be done to improve each project, 33 students responded on Naturalistic Observation, 46 responded on the Survey Project, and 33 responded on the Group Design Project. Of these, 36% thought Naturalistic Observation was fine the way it was, while 12% thought the same about the Group Design. Students thought the explanation of the write-up could be improved for each project: 46% for Naturalistic Observation, 11% for Survey, 36% for Group Design. To improve the explanation, students suggested the use of example papers. Students also suggested improving the project explanations and project content for all labs: 18% for Naturalistic Observation, 41% for Survey, 27% for Group Design. Twenty-two percent of respondents suggested improved explanation of data coding and statistics for the Survey Lab. About a quarter of respondents felt that more time should be spent on the

Survey and Group Design Projects. See Appendix C, pp. 184-185, 188-189, 192-193 for verbatim student comments.

Additional comments were made by a small number of students: Naturalistic Observation, n = 14; Survey, n = 15, Group Design, n = 11. For Naturalistic Observation and Survey, about 20% of comments were positive opinions; for Group Design, about 9% of comments were positive opinions. For example, students thought Naturalistic Observation was a nice, easy project to start with; students found the Survey Project to be the most interesting and challenging, and others found it interesting to do two-way ANOVA's in the Group Design Project. For the Survey, 7% of comments were negative opinions about the amount of work involved in the project, while for the Group Design, 36% of comments were negative, expressing dissatisfaction with the project itself or the article used for background material. For Naturalistic Observation, 21% of comments were related to write-up. For the Group Design, 27% of comments related to lack of sufficient time for the project. For the Survey, 47% of comments pertained to specific aspects of the project. There were complaints about TA's for all projects. TA complaints made up 57% of Naturalistic Observation comments, and 27% of Survey

and Group Design comments. These complaints mainly expressed dissatisfaction with a grade, but some serious complaints of negligence were also expressed. See Appendix C, pp. 185, 189-190, 193, for verbatim student comments.

General questions were asked about lab projects and materials. Results were consistent with results from specific questions. Most students felt that individual meetings with TA's were an important and valuable part of Methods, and that handouts and write-up checklists were helpful (see Table 30 for frequencies and means). Students rated the lab sections as "Informative" (72%), "Worthwhile" (71) and "Somewhat enjoyable" (49%). Only 25% thought lab sections were a "Waste of Time" and 31% rated them as "Repetitive," although about half (46%) rated them as "Somewhat Boring." Most students thought that the lab was "Important for Their Education" (65%). See Table 31 for frequencies and means.

Students were asked which lab project they enjoyed most and least, and also which project was most educational. For these questions, the Independent Project was included as a choice because at the time of Survey administration, the students had completed enough of the independent project to form an opinion about. Almost even numbers of students

(around 30%) reported enjoying the Independent Project, Naturalistic Observation, and Survey Lab the most. Forty-three percent of students enjoyed the Survey least, while 30% enjoyed the Group Project least. Forty percent of students reported that they learned the most from the Independent Project, but it is interesting to note that 35% reported that they learned the most from the Survey Project, even though many students found this project to be least enjoyable. See Table 32 for frequencies and means.

## Open Ended Questions

### Course Format and Focus

In an attempt to gain more information about the course priorities, students and faculty were asked to respond to two open-ended questions concerning the focus and format of the course. For students, results are given from the Final Student Survey only.

The first question asked whether the course should prepare students to be research consumers or research practitioners. Of the 102 students who responded, 57% felt that students should be prepared as research practitioners. Most students commented that they learned to critique others' research in the course of doing their own, and that doing research

created more interest in the course. Others (15%) felt students should be prepared as research consumers. Several students felt that since few students planned to go into research, this would be sufficient. Some suggested that learning to critique others' work would teach research principles by example. About 22% of student respondents thought that they should be prepared as both consumers and practitioners of research. About 6% of students made miscellaneous comments, such as separating the elements into two courses with critique mandatory and research projects optional.

Eighteen faculty members responded. About 39% of faculty respondents (n = 7)felt that students should be prepared as research practitioners, and four comments reflected the idea that students would best learn to critique others' work by doing their own. Twenty-eight percent (n = 5) thought that students should be prepared as research consumers. As did students, one faculty member commented that critique is a good step toward doing your own research, while another thought that too few students go into research careers for that to be the focus. Six faculty members (33%) thought that both were important and could not be separated. See pp. 205-207 of Appendix D for verbatim student and faculty comments.

The second question asked whether students would benefit from more conceptual work or more hands-on work. Of the 96 students who responded, 75% felt that students would benefit from more hands-on experience, 18% thought both were equally important, and 7% thought that more conceptual work would be beneficial. Eighteen faculty members responded. Fifty-five percent (n = 10) felt that hands-on work is essential; six noted that this is the only hands-on course that students were likely to take. Twenty-seven percent (n = 5) felt that students would benefit from both conceptual and hands-on work. Sixteen percent (n = 3) thought that students would benefit from more conceptual work, one citing that the hands-on model has failed due to dwindling resources and overgrowth of the department. See pp. 207-208 of Appendix D for verbatim student and faculty comments.

Thus, the majority of students and faculty believe that the course should focus on how to do research and use a hands-on format to accomplish this. For students, these findings fit well with their priority ratings and rank order of topic areas that emphasized applied aspects. But for faculty, these findings are interesting and somewhat confusing, given the higher priority that faculty gave to theoretical aspects over applied aspects.

If faculty goals and current curriculum don't

match, then what would faculty include in their curriculum? To answer this question, faculty were asked to rate the importance of covering specific experimental designs and methodology in the course. In rank order, faculty felt that Between-Groups Designs, Within-Subject Designs, Naturalistic Observation, and Survey should be covered. The faculty list matches the current course content, but is more limited in scope (The current course curriculum involves projects designed around naturalistic observation, Survey, and either between or within subjects designs, with the addition of an independent project of the students choice). This suggests that course content is not a source of faculty dissatisfaction.

## Emotional Response to the Course

To get a general sense of student's emotional response to the course, the fill-in format was used. Students were asked to fill in the following statement: "When I think of taking this course, I feel _____." Students gave responses on both Initial and Final Surveys to determine if their emotional response changed after having taken the course. Data were submitted to Chi-Square analysis,

with initial responses used as expected values. Both Initial and Final Student Survey responses were converted to percentages for comparison. No significant differences in frequency of responses were found, indicating that student opinion did not change much over time. In the Initial Student Survey, 105 students responded, while 93 responded to the Final Student Survey. Responses were categorized as positive (e.g. challenged, curious, interested, good), neutral or ambivalent (e.g. all right, unsure, busy, neutral) and negative (e.g. nervous, anxious, scared, overwhelmed). Twenty percent of initial respondents gave positive replies, 9% gave neutral/ambivalent responses, and 71% gave negative responses. Twenty-four percent of final respondents gave positive responses, 15% gave neutral/ambivalent responses and 61% gave negative responses. See pp. 200-201 of Appendix D for verbatim student comments.

Similarly, faculty members were asked to fill in the following blank: "When I think about teaching Methods, I feel _____." Twenty-one faculty responded; 19% (n=4) gave positive responses, 29% (n = 6) gave neutral or qualified responses and 52% (n = 11) gave negative responses. See p. 204 of Appendix D for verbatim faculty comments.

Students were also asked to fill in how they felt when they thought of using a computer, and doing

statistics. Responses were categorized as above, and Chi-Square was used to analyze the data. Again, final responses did not change significantly from initial responses, although responses were more positive than for the above question. When asked about computers, 103 students responded on the Initial Survey, and 91 responded on the Final Survey. On the Initial Survey, 46% made positive responses, 12% made neutral/ambivalent responses, and 42% made negative responses. On the Final Survey, 47% made positive responses, 18% made neutral/ambivalent responses, and 35% made negative responses.

When asked about statistics, 92 students responded on the Initial Survey, and 90 responded on the Final Survey; and category percentages were nearly identical for Initial and Final Surveys. About 40% of responses were positive, 10% were neutral/ambivalent, and 50% were negative. See pp. 201-203 of Appendix D for verbatim student comments for the two preceding fill-in's.

## Course Improvements

Students and faculty were asked to comment on several ideas that have been proposed to improve the course. The first question asked for student opinions

about conducting the lab in one 3-hour period instead of the current format of two, one-and-one-quarter-hour lab periods. Ninety three students responded; 83% of them disliked the idea. Most students commented that this format would make it difficult to learn and digest the material, and that there would be fewer opportunities to ask questions and touch base with TA's. Many students commented that lab would become boring. Also, students feared that it would be very difficult to make up even one missed lab meeting. Nine percent of those who responded felt it would be a good idea; the majority of those felt it would be better to get lab over with in one shot. The remaining students made qualified remarks. Of these, most felt one 3 hour period could work if the TA was well prepared and presented material clearly. See p. 195 of Appendix C for verbatim student comments.

The second question asked whether students thought that total lab time could be shortened to 2 hours per week without deleting content. About two-thirds of the 101 respondents thought this was possible. Many students commented that they frequently had time left at the end of the lab section. Other students (38%) did not agree. Some commented that they always used the full time and occasionally needed extra time. Many felt that students needed all the lab time they could get.

Others felt that instructors could always dismiss class early but the full time should be allotted. See p. 196 of Appendix C for verbatim student comments.

Students and faculty were asked their opinion about integrating Statistics and Methods into a year-long course. They were asked to respond on a 5-point scale from "very positive" to "very negative." One hundred one students responded in the following way: 17% said "Very Positive;" 35%, "Positive;" 22%, "Neutral;" 16%, "Negative;" and 11%, "Very Negative." In addition, 70 students commented on this idea. Thirty-seven percent liked the idea, especially because it would eliminate the gap between Statistics and Methods. Other students commented that this arrangement would be desirable because statistics could be directly applied, which would help with learning and retention. But 34% of respondents did not like the idea, stating that it would be intimidating and overwhelming, and that Statistics needs to be mastered first. Twenty-nine percent of respondents made qualified or ambivalent comments concerning the number of credits the course would be worth or exactly what it would entail. See p. 208-212 of Appendix D for verbatim student comments.

Nineteen faculty responded to this question on the same scale. Five (26%) responded "Very Positive;"

10 (53%), "Positive;" 3 (16%), "neutral" and 1 (5%), "Very Negative." Although most faculty responded favorably on the scale, only two faculty members made favorable comments; the remaining comments revealed ambivalent sentiments. See p. 212 of Appendix D for verbatim faculty comments. Most felt that it was a good idea in principle, but putting it into practice would be very difficult--if not impossible. Faculty members were also asked their opinion of whether faculty, students, and TA's would benefit from such an arrangement. Respondents were not sure if faculty would benefit (yes = 3, no = 3, maybe = 5), but they thought students and TA's would benefit (yes = 9, maybe = 4; yes = 4, maybe = 2, respectively).

A similar question asked how students felt about integrating Statistics and Methods into a year-long course and offering a 400-level laboratory course for motivated students. The scale was as above, and 98 students responded. Twenty percent responded "Very Positive;" 35%, "Positive;" 19%, "Neutral;" 15%, "Negative;" 10%, "Very Negative." Thirty-six students made comments on the idea. Of these comments, 39% were positive, many citing the advantages for students who plan to go on to graduate school. Seventeen percent of comments were negative, stating that the courses were fine as is or that the lab would be too intimidating. The majority of comments (44%) fell in

the qualified or ambivalent category. Some students offered their own combination of options, such as combining Statistics and Methods and making the lab mandatory, keeping Statistics and Methods separate but still offering the optional lab, or combining it with Junior Writing. See pp. 213-215 of Appendix D for verbatim student comments.

Nineteen faculty responded to the same question. Seven (37%) responded "Very Positive;" four (21%), "Positive;" three (16%), "Negative;" and five (26%), "Very Negative." Most comments were negative, suggesting that the advanced courses currently offered by the department cover the needs of motivated students, and that every student needs the basic lab course. See p. 215 of Appendix D for verbatim faculty comments. Note: Because of wording, the meaning of this question was unclear to some. Several respondents commented on this, and the confusion was evident in some responses.

Finally, two questions asked students for direct suggestions for improving the course. The first of these questions asked the students what parts of the course they would cut if they were forced to cut something. Most of the 101 students who responded said they would cut all (56%) or part (13%) of lecture. Most comments suggested that lectures were

confusing or useless. Of the students who would cut parts of lecture, comments suggested that lecture time be shortened, exams be cut, four quizzes be given instead of exams, and that lectures be reorganized to relate to labs.

About 16% of students would cut things from lab. Some students would like to cut one lab project; student opinion varied on which project to cut. Some suggested cutting the Survey or at least reducing the complexity of the project. Some suggested cutting the Group Design or Independent Project, while others stressed the importance of giving adequate time to the Independent Project. About 6% of students felt that homework, computer usage, or library requirements should be cut. And 9% of students felt that nothing should be cut, but that the material should be reorganized and the course should be better managed. See pp. 196-198 of Appendix C for student comments.

Finally, students were asked to make suggestions for improving the course and given an opportunity to make any other comments they wished. Thirty-six students made comments. The largest category of comments (36%) made suggestions for improvement that related to lecture. Suggestions varied from eliminating lecture altogether to improving lecture by integrating it with lab material. Other students (19%) thought the course would benefit by improved TA

performance. Students made reference to helpful and unhelpful TA's. Seventeen percent made specific suggestions, such as increasing the amount and discussion of homework, giving non-graded exercises, and increasing computer lab hours. Some students (14%) suggested decreasing the work load or increasing course credit. Fourteen percent of respondents made miscellaneous comments unrelated to course improvement. See pp. 216-217 of Appendix D for verbatim student comments.

**Table 1**

**Comparison Between Initial and Final Student Priority Ratings of Part I: Within-Subject MANOVA Results**

| Topic Area | Group | | F |
|---|---|---|---|
| | Initial Student | Final Student | |
| | Lab | | |
| Theory of Experimental Design and Scientific Method | | | |
| Mean | 2.92 | 2.89 | .15 |
| SD | .45 | .59 | |
| Critical Reading and Thinking | | | |
| Mean | 3.22 | 3.30 | 1.17 |
| SD | .47 | .58 | |
| Applied Experimental Design | | | |
| Mean | 3.58 | 3.56 | .06 |
| SD | .46 | .53 | |
| Statistics and Computers | | | |
| Mean | 3.21 | 3.38 | 3.04 |
| SD | .58 | .60 | |
| Written Communication | | | |
| Mean | 3.35 | 3.45 | 1.05 |
| SD | .51 | .67 | |
| Generalization of Knowledge and Skills | | | |
| Mean | 2.97 | 2.89 | .69 |
| SD | .70 | .80 | |

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**Table 1 continued**

| Topic Area | Group | | F |
|---|---|---|---|
| | Initial Student | Final Student | |
| | Lecture | | |
| Theory of Experimental Design and Scientific Method | | | |
| Mean | 3.06 | 2.93 | 3.42 |
| SD | .49 | .68 | |
| Critical Reading and Thinking | | | |
| Mean | 2.63 | 2.4 | 8.02** |
| SD | .51 | .63 | |
| Applied Experimental Design | | | |
| Mean | 2.57 | 2.3 | 8.02** |
| SD | .62 | .65 | |
| Statistics and Computers | | | |
| Mean | 2.79 | 2.65 | 2.47 |
| SD | .58 | .70 | |
| Written Communication | | | |
| Mean | 2.52 | 2.12 | 14.95**** |
| SD | .68 | .76 | |
| Generalization of Knowledge and Skills | | | |
| Mean | 2.71 | 2.45 | 6.90** |
| SD | .63 | .69 | |

*p < .05. **p < .01. ***p < .001. **** p < .0001.

**Note. The higher the mean, the higher the priority.**

**Table 2**

**Comparison Between Final Student and Faculty Priority Ratings of Part I: Between-Subject MANOVA Results**

| Topic Area | Group | | | F |
|---|---|---|---|---|
| | Final Student (n=91) | Faculty (n=21) | (Instructor) (n=1) | |
| | | Lab | | |
| Theory of Experimental Design and Scientific Method | | | | |
| Mean | 2.78 | 2.82 | (4) | .056 |
| SD | .65 | .72 | -- | |
| Critical Reading and Thinking | | | | |
| Mean | 3.26 | 2.94 | (3.7) | 4.46* |
| SD | .60 | .68 | -- | |
| Applied Experimental Design | | | | |
| Mean | 3.56 | 3.33 | (2.72) | 3.35 |
| SD | .52 | .45 | -- | |
| Statistics and Computers | | | | |
| Mean | 3.36 | 2.94 | (3) | 9.01** |
| SD | .55 | .68 | -- | |

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**Table 2 continued**

| Topic Area | Group: Final Student (n=91) | Group: Faculty (n=21) | Group: (Instructor) (n=1) | F |
|---|---|---|---|---|
| Written Communication | | | | |
| Mean | 3.39 | 3.12 | (3) | 2.67 |
| SD | .66 | .74 | -- | |
| Generalization of Knowledge and Skills | | | | |
| Mean | 2.73 | 2.24 | (4) | 5.43* |
| SD | .84 | .94 | -- | |
| | Lecture | | | |
| Theory of Experimental Design and Scientific Method | | | | |
| Mean | 2.91 | 3.42 | (3.4) | 11.07*** |
| SD | .67 | .41 | -- | |
| Critical Reading and Thinking | | | | |
| Mean | 2.41 | 2.96 | (4) | 12.40*** |
| SD | .65 | .58 | -- | |

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**Table 2 continued**

| Topic Area | Group: Final Student (n=91) | Group: Faculty (n=21) | Group: (Instructor) (n=1) | F |
|---|---|---|---|---|
| Applied Experimental Design | | | | |
| Mean | 2.29 | 2.47 | (4) | 1.11 |
| SD | .71 | .54 | – | |
| Statistics and Computers | | | | |
| Mean | 2.62 | 2.51 | (3.6) | .49 |
| SD | .68 | .48 | – | |
| Written Communication | | | | |
| Mean | 2.08 | 2.21 | (3.4) | .5 |
| SD | .77 | .68 | – | |
| Generalization of Knowledge and Skills | | | | |
| Mean | 2.37 | 2.39 | (4) | .45 |
| SD | .69 | .74 | – | |

*p < .05. **p < .01. ***p < .001.

**Note. The higher the mean, the higher the priority.**

**Table 3**

**Rank Order of Priority for Topic Areas for Students and Faculty**

| Topic Area | Group | |
|---|---|---|
| | Students n=91 | Faculty n=21 |
| Theory of Experimental Design | 2 | 1 |
| Critical Reading and Thinking | 4 | 2 |
| Applied Experimental Design | 1 | 3 |
| Statistics and Computers | 5.5 | 5 |
| Written Communication | 3 | 4 |
| Generalization | 5.5 | 6 |

**Table 4**

**Comparison Between Initial and Final Student Achievement Ratings: Within-Subject MANOVA Results**

| Topic Area | Group | | F |
|---|---|---|---|
| | Initial Student | Final Student | |
| Theory of Experimental Design and Scientific Method | | | |
| Mean | 2.78 | 3.29 | 28.16**** |
| SD | .82 | .63 | |
| Critical Reading and Thinking | | | |
| Mean | 2.91 | 3.32 | 17.73**** |
| SD | .62 | .73 | |
| Time Management | | | |
| Mean | 3.38 | 3.30 | .3 |
| SD | .97 | 1.07 | |
| Applied Experimental Design | | | |
| Mean | 2.42 | 3.26 | 42.16**** |
| SD | .81 | .67 | |
| Statistics and Computers | | | |
| Mean | 2.57 | 3.03 | 13.39**** |
| SD | .93 | .77 | |

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**Table 4 continued**

| Topic Area | Group | | F |
|---|---|---|---|
| | Initial Student | Final Student | |
| Written Communication | | | |
| Mean | 2.58 | 3.27 | 30.57**** |
| SD | .79 | .76 | |
| Generalization of Knowledge and Skills | | | |
| Mean | 3.02 | 3.24 | 3.37 |
| SD | .76 | .72 | |
| Preparation for Future Career | | | |
| Mean | 2.75 | 2.83 | .23 |
| SD | 1.02 | .81 | |

*p < .05. **p < .01. ***p < .001. **** p < .0001.

**Note. The higher the mean, the higher the achievement.**

**Table 5**

**Means and Distribution of Responses for Lecture Items**

| Item | Response (%) | | | | Mean |
|---|---|---|---|---|---|
| | Strongly Agree 1 | Agree 2 | Disagree 3 | Strongly Disagree 4 | |
| The lecture format was easy to understand. | 7 | 49 | 36 | 8 | 2.44 |
| I knew what was expected of me. | 10 | 53 | 35 | 2 | 2.28 |
| The lectures were clearly presented. | 4 | 49 | 41 | 6 | 2.48 |
| Important concepts were emphasized in lecture. | 13 | 58 | 25 | 4 | 2.20 |
| Clear examples were used to illustrate concepts in lecture. | 14 | 46 | 32 | 8 | 2.35 |
| The examples helped me understand the lecture concepts. | 11 | 48 | 34 | 7 | 2.37 |
| The example midterm exam illustrated what was expected on the exam. | 16 | 46 | 31 | 7 | 2.30 |
| Reviewing the sample exam probably improved my score on the midterm. | 23 | 43 | 22 | 12 | 2.25 |
| The midterm was a fair exam. | 4 | 29 | 46 | 21 | 2.85 |
| The concepts presented in lecture were illustrated in the lab projects. | 8 | 44 | 34 | 14 | 2.53 |

**Table 6**

**Means and Distribution of Responses for Homework Items**

| Item | Response (%) Strongly Agree 1 | Agree 2 | Disagree 3 | Strongly Disagree 4 | Mean |
|---|---|---|---|---|---|
| The homework helped me understand the statistics used in the lab reports. | 42 | 48 | 9 | 1 | 1.69 |
| The homework helped me understand the lecture material. | 5 | 25 | 50 | 20 | 2.84 |
| There should be more homework directly related to lecture concepts. | 34 | 40 | 22 | 4 | 1.95 |
| I'm glad I had a chance to use a computer in this course. | 45 | 47 | 4 | 4 | 1.67 |
| Computers should not be a required part of this course. | 5 | 14 | 36 | 45 | 3.24 |
| Even with the handouts, using the computer confused me. | 15 | 29 | 33 | 23 | 2.69 |

**Table 7**

**Clarity Ratings of Homework**

| | Response (%) | | |
|---|---|---|---|
| | Clear | Unclear | Mean |
| Assignment | 1 | 2 | |
| Homework 1: Chi-Square and Handouts | 99 | 1 | 1.02 |
| Homework 2: One-way ANOVA and Handouts | 97 | 3 | 1.03 |
| Homework 3: Two-way Between Subjects ANOVA and Handouts | 89 | 11 | 1.12 |
| Homework 4: Two-way Mixed Design ANOVA and Handouts | 92 | 8 | 1.08 |

**Table 8**

**Usefulness Ratings of Homework**

| | Response (%) | | |
|---|---|---|---|
| | Helpful | Not Helpful | Mean |
| Assignment | 1 | 2 | |
| Homework 1: Chi-Square and Handouts | 95 | 5 | 1.05 |
| Homework 2: One-way ANOVA and handouts | 95 | 5 | 1.05 |
| Homework 3: Two-way Between Subjects ANOVA and Handouts | 87 | 13 | 1.12 |
| Homework 4: Two-way Mixed Design ANOVA and Handouts | 82 | 18 | 1.18 |

**Table 9**

**Difficulty Ratings of Homework**

| | Response (%) | | | |
|---|---|---|---|---|
| | Too Easy | About Right | Too Difficult | Mean |
| **Assignment** | 1 | 2 | 3 | |
| Homework 1: Chi-Square and Handouts | 2 | 98 | 0 | 1.97 |
| Homework 2: One-way ANOVA and handouts | 2 | 93 | 5 | 2.03 |
| Homework 3: Two-way Between Subjects ANOVA and Handouts | 2 | 90 | 8 | 2.06 |
| Homework 4: Two-way Mixed Design ANOVA and Handouts | 3 | 87 | 10 | 2.03 |

**Table 10**

**Comprehension Ratings of Homework**

| | Response (%) | | |
|---|---|---|---|
| | Understood | Did Not Understand | Mean |
| **Assignment** | 1 | 2 | |
| Homework 1: Chi-Square and Handouts | 99 | 1 | 1.02 |
| Homework 2: One-way ANOVA and handouts | 96 | 4 | 1.06 |
| Homework 3: Two-way Between Subjects ANOVA and Handouts | 91 | 9 | 1.11 |
| Homework 4: Two-way Mixed Design ANOVA and Handouts | 83 | 13 | 1.20 |

**Table 11**

**Means and Distribution of Responses for Library Items**

| Item | Response (%) Strongly Agree 1 | Agree 2 | Disagree 3 | Strongly Disagree 4 | Mean |
|---|---|---|---|---|---|
| The lecture on library sources was helpful. | 22 | 50 | 21 | 7 | 2.13 |
| The Librarians were helpful. | 30 | 52 | 13 | 5 | 1.93 |
| Library skills learned in methods will be helpful in other classes. | 33 | 56 | 10 | 1 | 1.80 |

**Table 12**

**Rating of the Format of Each Lab Project**

| Project | Response (%) Excellent 1 | Adequate 2 | Somewhat Unclear 3 | Confusing 4 | Mean |
|---|---|---|---|---|---|
| Naturalistic Observation | 31 | 58 | 9 | 2 | 1.84 |
| Survey | 7 | 57 | 28 | 8 | 2.30 |
| Group Design | 13 | 66 | 16 | 5 | 2.12 |

**Table 13**

**Responses to the Item: The Goals of the Lab Projects Were Clear**

| Project | Response (%) | | | | Mean |
|---|---|---|---|---|---|
| | Strongly Agree | Agree | Disagree | Strongly Disagree | |
| | 1 | 2 | 3 | 4 | |
| Naturalistic Observation | 33 | 53 | 13 | 1 | 1.83 |
| Survey | 16 | 59 | 22 | 3 | 2.10 |
| Group Design | 13 | 62 | 24 | 1 | 2.12 |

**Table 14**

**Responses to the Item: I Knew What Was Expected of Me**

| Project | Response (%) | | | | Mean |
|---|---|---|---|---|---|
| | Strongly Agree | Agree | Disagree | Strongly Disagree | |
| | 1 | 2 | 3 | 4 | |
| Naturalistic Observation | 23 | 42 | 27 | 8 | 2.20 |
| Survey | 12 | 57 | 28 | 3 | 2.20 |
| Group Design | 13 | 65 | 19 | 3 | 2.11 |

**Table 15**

**Rating of the Difficulty Level of the Lab Projects**

| | Response (%) | | | | | |
|---|---|---|---|---|---|---|
| Project | Too Easy 1 | Easy 2 | About Right 3 | Difficult 4 | Too Difficult 5 | Mean |
| Naturalistic Observation | 5 | 12 | 71 | 12 | 1 | 2.91 |
| Survey | 2 | 4 | 24 | 54 | 16 | 3.77 |
| Group Design | 1 | 7 | 51 | 37 | 4 | 3.35 |

**Table 16**

**Rating of the Difficulty Level of Calculating the Statistic**

| | Response (%) | | | | | |
|---|---|---|---|---|---|---|
| Statistic | Very Easy 1 | Easy 2 | Average 3 | Difficult 4 | Very Difficult 5 | Mean |
| Chi-Square | 17 | 37 | 46 | 0 | 0 | 2.29 |
| One-Way ANOVA | 5 | 20 | 51 | 23 | 1 | 2.90 |
| Two-Way Mixed ANOVA | 4 | 17 | 58 | 20 | 1 | 2.96 |

**Table 17**

**Responses to the Item: Did You Do This Calculation in Statistics Course?**

| | Response (%) | | |
|---|---|---|---|
| | Yes | No | Mean |
| Statistic | 1 | 2 | |
| Chi-Square | 73 | 27 | 1.33 |
| One-Way ANOVA | 35 | 65 | 1.78 |
| Two-Way Mixed ANOVA | 21 | 79 | 1.87 |

**Table 18**

**Rating of the Explanation of the Statistical Interpretation for Each Lab Project**

| | Response (%) | | | | |
|---|---|---|---|---|---|
| | Excellent | Adequate | Somewhat Unclear | Confusing | Mean |
| Project | 1 | 2 | 3 | 4 | |
| Naturalistic Observation | 20 | 66 | 12 | 2 | 1.96 |
| Survey | 8 | 43 | 40 | 9 | 2.50 |
| Group Design | 9 | 64 | 23 | 4 | 2.37 |

**Table 19**

**Rating of the Presentation of the Write-Up for Each Lab Project**

| | Response (%) | | | | |
|---|---|---|---|---|---|
| Project | Excellent 1 | Adequate 2 | Somewhat Unclear 3 | Confusing 4 | Mean |
| Naturalistic Observation | 18 | 57 | 15 | 10 | 2.17 |
| Survey | 8 | 54 | 26 | 12 | 2.40 |
| Group Design | 10 | 51 | 30 | 9 | 2.37 |

**Table 20**

**Rating of the Difficulty Level of Writing the Paper, After Instruction**

| | Response (%) | | | | | |
|---|---|---|---|---|---|---|
| Project | Very Easy 1 | Easy 2 | Average 3 | Difficult 4 | Very Difficult 5 | Mean |
| Naturalistic Observation | 6 | 8 | 55 | 21 | 10 | 3.20 |
| Survey | 1 | 5 | 25 | 55 | 14 | 3.75 |
| Group Design | 2 | 10 | 41 | 36 | 11 | 3.43 |

**Table 21**

**Responses to the Item: Did You Have Trouble Regarding the Following Sections of the Paper?**

| Project | Response (%) Yes 1 | No 2 | Mean |
|---|---|---|---|
| | Abstract | | |
| Naturalistic Observation | 56 | 44 | 1.44 |
| Survey | 48 | 52 | 1.61 |
| Group Design | 44 | 56 | 1.63 |
| | Introduction | | |
| Naturalistic Observation | 51 | 49 | 1.40 |
| Survey | 58 | 42 | 1.44 |
| Group Design | 52 | 48 | 1.51 |
| | Method | | |
| Naturalistic Observation | 33 | 67 | 1.57 |
| Survey | 37 | 63 | 1.63 |
| Group Design | 34 | 66 | 1.56 |

**Continued, next page**

**Table 21 continued**

| Project | Response (%) Yes 1 | No 2 | Mean |
|---|---|---|---|
| | Results | | |
| Naturalistic Observation | 51 | 49 | 1.40 |
| Survey | 75 | 25 | 1.26 |
| Group Design | 57 | 43 | 1.44 |
| | Discussion | | |
| Naturalistic Observation | 70 | 30 | 1.30 |
| Survey | 68 | 32 | 1.34 |
| Group Design | 70 | 30 | 1.30 |

**Table 22**

**Responses to the Item: Did You Meet with Your TA to Review a Rough Draft?**

| | Response (%) | | |
|---|---|---|---|
| | Yes | No | Mean |
| Project | 1 | 2 | |
| Naturalistic Observation | 81 | 19 | 1.18 |
| Survey | 67 | 33 | 1.34 |
| Group Design | 73 | 27 | 1.31 |

**Table 23**

**Percent of Rough Draft Completed before Meeting with TA**

| | Response (%) | | | | | |
|---|---|---|---|---|---|---|
| | N/A | ≥ 25% | 50% | 75% | 100% | Mean |
| Project | 1 | 2 | 3 | 4 | 5 | |
| Naturalistic Observation | 23 | 6 | 5 | 22 | 41 | 1.18 |
| Survey | 33 | 5 | 16 | 24 | 22 | 2.95 |
| Group Design | 28 | 6 | 7 | 31 | 28 | 3.23 |

**Table 24**

**Rating of Meetings with the TA**

| | Response (%) | | | | | |
|---|---|---|---|---|---|---|
| Project | N/A<br>1 | Very Helpful<br>2 | Somewhat Helpful<br>3 | Not Very Helpful<br>4 | Not At All Helpful<br>5 | Mean |
| Naturalistic Observation | 16 | 39 | 26 | 11 | 3 | 2.43 |
| Survey | 30 | 37 | 24 | 4 | 2 | 2.07 |
| Group Design | 24 | 41 | 27 | 7 | 1 | 2.20 |

**Table 25**

**Responses to the Item: My TA Answered My Questions Clearly**

| | Response (%) | | | | |
|---|---|---|---|---|---|
| Project | Strongly Agree<br>1 | Agree<br>2 | Disagree<br>3 | Strongly Disagree<br>4 | Mean |
| Naturalistic Observation | 32 | 50 | 14 | 4 | 1.90 |
| Survey | 17 | 58 | 19 | 6 | 2.16 |
| Group Design | 18 | 60 | 18 | 4 | 2.08 |

**Table 26**

**Responses to the Item: My TA Made Specific Comments on My Paper**

| | Response (%) | | | | |
|---|---|---|---|---|---|
| Project | Strongly Agree 1 | Agree 2 | Disagree 3 | Strongly Disagree 4 | Mean |
| Naturalistic Observation | 32 | 50 | 14 | 4 | 1.90 |
| Survey | 26 | 58 | 9 | 5 | 1.94 |
| Group Design | 20 | 54 | 17 | 8 | 2.14 |

**Table 27**

**Distribution of Lab Report Grades**

| | Response (%) | | | | | |
|---|---|---|---|---|---|---|
| Project | <60% 1 | 60-67.9% 2 | 68-77.9% 3 | 78-87.9% 4 | >88% 5 | Mean |
| Naturalistic Observation | 11 | 19 | 25 | 33 | 11 | 3.14 |
| Survey | 4 | 13 | 23 | 39 | 21 | 3.58 |
| Group Design | 3 | 7 | 15 | 48 | 27 | 3.88 |

**Table 28**

**Responses to the Item: Did the Project Help You to Understand the General Concepts of the Design Type?**

| | Response (%) | | | | |
|---|---|---|---|---|---|
| Project | Yes 1 | Somewhat 2 | Not Really 3 | Not At All 4 | Mean |
| Naturalistic Observation | 74 | 23 | 1 | 2 | 1.35 |
| Survey | 51 | 38 | 7 | 4 | 1.64 |
| Group Design | 32 | 47 | 16 | 5 | 1.93 |

**Table 29**

**Rating of Confidence in Ability to Apply Knowledge Gained from the Lab Project to Other Projects Requiring Similar Designs**

| | Response (%) | | | | |
|---|---|---|---|---|---|
| Project | Unconfident 1 | Somewhat Unconfident 2 | Somewhat Confident 3 | Confident 4 | Mean |
| Naturalistic Observation | 5 | 10 | 52 | 33 | 3.11 |
| Survey | 7 | 26 | 50 | 17 | 2.76 |
| Group Design | 9 | 31 | 51 | 9 | 2.60 |

**Table 30**

**Means and Distribution of Responses for General Items**

| Project | Response (%) | | | | Mean |
|---|---|---|---|---|---|
| | Strongly Agree 1 | Agree 2 | Disagree 3 | Strongly Disagree 4 | |
| Individual meetings with TA's are an important part of Methods. | 64 | 26 | 10 | 0 | 1.46 |
| TA meetings were valuable. | 51 | 33 | 10 | 6 | 1.71 |
| Write-up checklists were helpful. | 68 | 30 | 1 | 1 | 1.35 |
| In general, the handouts were helpful. | 52 | 44 | 4 | 0 | 1.52 |

**Table 31**

**Means and Distribution of Responses for Descriptive Items**

| | Response (%) | | | |
|---|---|---|---|---|
| Project | Yes 1 | Somewhat 2 | No 3 | Mean |
| Informative | 72 | 20 | 8 | 1.39 |
| Enjoyable | 34 | 49 | 17 | 1.82 |
| Worthwhile | 71 | 22 | 7 | 1.36 |
| Waste of Time | 9 | 16 | 75 | 2.68 |
| Boring | 9 | 46 | 45 | 2.38 |
| Repetitive | 4 | 27 | 69 | 2.67 |
| Important for My Education | 65 | 25 | 10 | 1.45 |

**Table 32**

**Responses to Questions on Comparison of Lab Projects**

| Project | Response (%) | | | | Mean |
|---|---|---|---|---|---|
| | Naturalistic Observation | Survey | Group Design | Independent Project | |
| | 1 | 2 | 3 | 4 | |
| Which lab project did you enjoy the most? | 30 | 27 | 10 | 33 | 2.44 |
| Which lab project did you enjoy least? | 9 | 43 | 30 | 18 | 2.56 |
| Which lab project did you learn the most from? | 9 | 35 | 16 | 40 | 2.85 |

# CHAPTER 4

# DISCUSSION

## Thesis

The discussion will assume the following format. After an argument to suggest that current course goals are reflected by student opinion, it is demonstrated that current course goals and the goals faculty espouse for the course do not match. Next, strengths and weaknesses of course materials are discussed. Finally, information garnered from analysis of materials are incorporated into a new structure for a curriculum arranged around faculty goals.

## Origins of Student and Faculty Opinions

Since survey questions on goals and priorities assessed student and faculty opinion, an examination of the origin of the opinions that students and faculty hold was called for. Initially, the surveys were designed to assess student and faculty perceptions of what an ideal Methods course should cover. This assumed that students and faculty had the ability to generalize about what an ideal methods course should entail. It will be argued that, while faculty possess the abilities necessary to make such

generalizations, students do not. Integral to this argument is the assertion that students and faculty developed their opinions about our Methods in Psychology course based on different experiences. Faculty have the perspective of research and teaching careers, but student experience is limited to exposure to our Methods course.

Presumably, faculty have had a host of experiences on which to base their opinions. These include career experience with research, teaching experience, and their personal experiences as students in undergraduate methodology courses. A research career requires by definition that research be designed and conducted. Teaching requires the development of course materials and tests. These activities have given faculty experience in areas that students have not yet explored. Thus, faculty opinion may represent a broader notion of what courses like Methods should include.

In contrast, students have only their experience with this methods course to draw on when forming an opinion about an ideal Methods in Psychology course. Since students were completing the course when the survey was administered, their responses might be viewed as representative of their experience in the course. If this were the case, students would form their opinions about what should be important based on what was important, i.e., what was given the most weight in the course (what they were graded on, what took the most time, etc.). The comparison of pre-course and

post-course priority ratings of lab and lecture lends evidence to suggest that this is the case; Post-course ratings differed from pre-course ratings and indicated that student opinion on the importance of lecture material dropped over the length of the course, while opinion on the importance of lab material increased or remained high. Thus, post-course opinion shifted to reflect the focus of the present course, where lab evaluation contributes 75% of the course grade, and more time is spent on lab assignments than lecture assignments. Since student opinion originates from the course content itself, it follows that student priorities are synonymous with current course goals.

Given the origins of the opinions, the difference in faculty and students opinion of course goals and priorities may be expressed as the difference between the current state of affairs (student survey responses) and the ideal state of affairs (faculty survey responses). This offers an opportunity to compare the match between what the students experienced as present course goals with what the faculty deem as desirable course goals.

## Discrepancies Between Student and Faculty Opinions

When current course goals and the goals that faculty hold for this course are compared, the most important finding is that they do not match. This is illustrated by the difference in student and faculty hierarchical ranking

of topic areas. When asked to put the six topic areas of the course in a rank order of importance, faculty ranked theoretical aspects of design more highly that applied aspects, while students ranked applied aspects of design higher than theoretical aspects.

Why do students and faculty produce overall rank orders that differ? The difference stems from the importance that students and faculty place on each component. For lab, students gave significantly higher priority ratings to all topic areas than faculty did, except Theory of Experimental Design, where no difference occurred. For lecture, faculty gave significantly higher priority ratings to Theory of Experimental Design and Critical Reading and Thinking than students did, while no differences were seen for other topic areas in lecture.

When students and faculty were asked to give overall rank order of topic areas, it appears that components of lab and lecture rank order as well as priority ratings were factored into the ranking. Different overall rank orders were produced because students took more weight from lab priorities and faculty took more weight from lecture priorities. The middle priorities from both lists fell to the bottom of the rank order list.

From the above, it is clear that course goals and faculty goals don't match. The nature of the disagreement is revealed by the different weights given to lab and

lecture. Students weight lab more than lecture and faculty weight lecture more than lab.

Student opinion reflects current course curriculum; the current course focuses on applied aspects of experimental design. But ideally, the faculty would have the course focus on theoretical aspects of experimental design. Therefore, a shift from current curriculum is called for if faculty goals are to be met. The direction of this shift should reflect knowledge gained from experience with specific course materials so that successful elements are incorporated into the new structure and problems are either solved or avoided.

## Course Content

Student evaluation of course materials served to outline strengths and weaknesses of the current course. It was obvious from a review of the survey responses that students have very clear ideas about what is going on in this course. Students could see which elements were well organized and where the strengths lay as easily as they could identify problem areas in need of improvement.

Use of examples and practice seem to be a main strength of the course. Students reported the most satisfaction with areas of the course that provided clear examples of problems and fostered ample practice of skills. Specifically, over half of the students reported that

examples used in lecture helped them to understand difficult concepts, although students suggested that clearer examples be chosen. Almost all students also rated homework as a valuable tool that helped them to practice statistics and understand concepts that were illustrated in the lab projects. Each homework problem was accompanied by a detailed example problem and data set, and students were required to apply concepts in the example problem to a more difficult homework problem.

Students also rated lab report checklists as very useful. These checklists served as outlines of content and format for each lab report, and each checklist detailed specific project related material that students might have been unfamiliar with. For example, methods and results were detailed in the first checklist, but were included in skeletal form for the second checklist. The second checklist detailed correct reference citation for the introduction. To foster development of their own internalized checklists and to promote analytical thinking, students were weaned off the checklist format as the course progressed. Students were required to reread old checklists for complete information on each paper, thus reviewing and integrating the material as they did so. No checklist was given for the final project.

Finally, students rated review of rough drafts as very valuable. Students were allowed to meet with their TA's to review completed rough drafts of lab reports. While

evaluating rough drafts, TA's challenged the clarity of the students' ideas and writing. Lack of clarity in writing often pointed to gaps in understanding which, once revealed, could be addressed. By writing rough drafts for critique, students practiced writing skills and learned to edit their own work. This practice resulted in great writing improvements by the end of the course.

In addition to indicating strengths of the course, students pointed to several weaknesses in the course. The greatest and most prominent weakness was the lack of clarity in the relation of theory and application. This weakness was evident in several aspects of the course. First, students reported that the connection between the lab and lecture components of the course was unclear. This was emphasized repeatedly in responses to several questions on the surveys. When asked for general improvements for the course, the most frequent response--given by over one-third of the respondents--was to improve lecture by integrating it with lab. When asked specifically how to improve lecture, almost half of the respondents suggested improving the quality of examples, and one-third stressed the importance of integrating lecture and lab. Finally, when asked what part of the course they would cut if forced to cut something, two-thirds of respondents said they would cut lecture altogether; the most frequent reason given was that the lecture was confusing and did not add to or relate to the lab portion of the course. A large proportion of

students reported that lecture material and lecture format were difficult to understand, and the presentation of the material lacked clarity. In addition, over half of the students felt that lecture concepts were not emphasized in lab projects and that homework did not help to illustrate lecture concepts. These responses clearly illustrate the dissatisfaction felt by the students toward the relationship of theory and application, as reflected in the relationship of lab and lecture.

But lack of connection between theory and application is a deeper, more fundamental problem than lack of connection between lab and lecture. Another example comes from within lab and is illustrated by the difficulty that students have in writing papers that require integration of theory and application as represented by the sections of a paper. Students report that the Method Section of a lab report is the easiest section of the paper to write. Students reported difficulty writing the Abstract, Introduction, and Results sections, but especially the Discussion section. This suggests that they understand the applied aspects, the mechanics of conducting research, but cannot put those mechanics in perspective with more theoretical aspects such as relevance with past research or implications of the results. In sum, students can run an experiment, but they don't understand the results. This represents a fundamental deficiency in the ability to connect theory and application.

For this course, the problem was compounded because the level of complexity of course material obscured general principles. Reports suggesting this came from all aspects of the course. Consider the following examples: A majority of students reported that lecture material was difficult to understand, the survey lab analysis was too complicated, the theory behind the group design was too difficult, and TA explanations of statistical interpretations were unclear. Menial tasks took a disproportionate amount of time, as was noted in the time and frustration that students reported concerning locating references in the library. Thus, not only is there a lack of explicit connection between theory and application, implicit priorities are obscured by difficult material, and students who search for goals are misled by inappropriate use of time.

## Reconciling Faculty and Course Goals

From an analysis of specific course materials and student criticism, it became clear that what is lacking in the course is exactly what the faculty see as fundamental for the course: emphasis on the theoretical framework. When students suggest strengthening the connection between lab and lecture, and between application and theory, they are in effect calling for a realignment of emphasis that the faculty advocate. While no one can say for certain that faculty goals would be more appropriate for this course than

course goals and priorities. The second level involves reorganizing the course curriculum to support the superstructure.

Three themes are emphasized. First, curricular elements that work well in the course are retained and new curricular elements are similarly structured. Second, problems that have been identified through these surveys are addressed. This involves restructuring existing elements of the course, shifting the focus and fine tuning what already exists. Finally, new techniques are explored for areas of the course that are not fully developed.

## Level One: Superstructure

Our current course is organized in a manner consistent with Seem (1989), who advocates organizing applied courses around central-planning questions such as, "What applied skills should be included in a given course?" (p. 471). Unfortunately, the effort doesn't necessarily result in the creation of a coherent hierarchy of goals.

In a survey of syllabi for research methods courses in sociology, Schutt, Blalock and Wagenarr (1984) found that this method of organization is common; most course objectives are either too general to structure a course or too specific to organize a complete course. To remedy the situation, the authors advocate the creation of organizing

the current goals, it is interesting to note that adoption of faculty goals could ameliorate student dissatisfactions.

If faculty goals were espoused and course emphasis shifted to expose an explicit theoretical framework, students would be exposed to a clear connection between the applied and theoretical. Although faculty rate theoretical aspects as highest priority, note that the restructuring called for represents a shift of emphasis or organization, rather than a change of content. This is clearly suggested by the findings that faculty generally approve of course content, and they wish to retain the hands-on learning techniques currently used. Thus the shift of emphasis would use the same ingredients with different structure or intent.

## Ideas for Future Curriculum

What can be done to improve the match between faculty goals and current curriculum, given that faculty wish to maintain the current format? How can such a restructuring be accomplished? This is a challenging task with no easy solutions.

The following curriculum organization was designed in an attempt to meet this challenge. It was based on adoption of faculty espoused goals and suggestions from the literature. The restructuring scheme is organized into two levels. The first level involves exposing the superstructure of the course. This requires organization of

goals with similar levels of abstraction, each of which is illustrated by specific course objectives. For example:

> Goal 2: TO ILLUSTRATE THE NATURE OF DEDUCTIVE AND INDUCTIVE METHODS, OR "HOW DO SCIENTISTS DO RESEARCH?"
> (a) Formulate specific hypotheses from a general theory.
> (b) Explain assumptions underlying statistical inference techniques.
> (c) Derive a theoretical proposition from a data report. (p. 239)

Schutt et al. (1984) suggested that each goal should represent a central theme that will outlive a particular course or lecture. In addition, the goals need to be explicitly repeated so students can understand their relation to course content. Faculty can evaluate material in terms of how well the materials illustrate the goals.

Schutt et al.'s (1984) method could be used to create a hierarchy of Ideal Faculty Goals. For this process, Brophy (1986) contends that the amount learned is related to the opportunity to learn, thus time spent on curricular elements should reflect course framework so that highest priority items receive the most attention. Accordingly, the course needs reorganization so that the most time and emphasis is spent on theory of experimental design, scientific method and critical reading and thinking, while applied aspects take a subordinate role and serve as examples for the main theoretical points. The desired result of restructuring is a course superstructure that is explicit and clear.

## Level Two: Curricular Development

Once the superstructure has been established, the course priorities need to be supported with course materials.

### Retain and Increase What Works

Examples of effective techniques can be found within the current methods course as well as from the literature. Student ratings reveal course strengths that have the following common features: The relationship between specific examples and general principles is explicit; exercises proceed from simple to difficult, and apply the experience gained from previous exercises to more difficult exercises.

Students praised these forms of practice and review, and made it clear in their survey responses that they benefited from the structure they provided. Thus, homework exercises with examples and lab report checklists should be retained in the curriculum and new materials should incorporate similar features.

For example, since students reported that they learn better when lecture examples are used, this technique could be applied in lab. Several students suggested that samples of lab reports might help them to understand what is

required or where their writing falls short. Little (1982) suggests use of a student writing scrapbook. With student permission, he photocopies examples of student writing including his comments and keeps them in a notebook that students can look at during office hours. He directs students to the examples when they are unsure about how their writing might be improved, or what is expected in a lab report.

## Problems and Solutions

This represents the largest area needing restructuring in the course. Course content dealing with theory and application is highly developed, but the explicit connection between them is not. Three problems need solutions.

### Connecting Lab and Lecture

First is the problem of connecting lecture and lab material. Students repeatedly complained that they did not comprehend the connection between the exercises they completed in lab and the principles of research they learned in lecture. The relationship between lab and lecture material should and could easily be made explicit, demystifying the process and increasing the relevance of course material to course goals. Clearly, students should

not have to guess at the motivation for including an assignment.

One solution might be to give students a syllabus outlining a clear hierarchy of goals, including levels of organization from abstract principles down to assignments that illustrate the principles. This would be a valuable first step in explaining the connection between lab and lecture.

Another solution might be to take five minutes of lecture time each week and state explicitly what main principles will be discussed in lecture and how lab exercises illustrate these principles. This might be a simple and cost-effective way to help students see the connection between theory and application. In addition, this exercise would point to areas of ambiguity in the curriculum and allow subsequent clarification.

## Connecting Theory and Application

The second problem is more difficult to remedy, and involves the paradigm of how psychological theory guides research. Students report difficulty with writing Introductions, Results and Discussion sections of papers, which points to problems with synthesizing and analyzing information. Although these are difficult concepts to teach, strategies could be employed to optimize the process. Suggestions from the literature provide specific techniques

and exercises to teach synthesis and analysis skills in the psychological laboratory.

If the highest course priority is to teach students how theory structures research, then critical reading exercises could be used to show how scientific method works, how theories develop and how hypotheses are formulated. For example, Chamberlain (1985) and Anisfeld (1987) developed exercises that focus on critical reading of journal articles so students learn to analyze research designs and begin to see how research works. Shilling (1983) used the exercise of searching backward and forward from a core article to demonstrate how previous articles contributed to a theoretical framework and were incorporated into the introduction, and how the article contributed to the development of subsequent theory or branched into other theories. This exercise illustrates how scientific method works in the development of theories as well as giving students practice with library skills.

Once students have seen from journal articles how science is done, they can try it for themselves in exercises where they write literature reviews and develop research proposals. To foster the required synthesis skills, Poe (1990) suggests a series of exercises that allow students to practice summarizing information, beginning with writing abstracts of existing articles and proceeding to writing literature reviews. In a different approach, McGovern and Hogshead (1990) encourage writing and rewriting skills by

assigning a Telescoping Paper in which students write an annotated bibliography and develop it into a literature review. The assignment expands into a research proposal, but the length of the paper remains constant, thus requiring editing.

The critical reading and thinking, writing, and editing skills developed and practiced through these kinds of exercises are all organized around teaching scientific methodology. If the purpose of these exercises is clearly and repeatedly emphasized to students, these exercises could suffice to illustrate the relation between theory and application.

## Restructuring Time Usage

The third problem is that lower priority goals receive inappropriate attention in the way of time or TA resources. For example, TA's find that when the first lab project is graded, correcting format errors take inordinate amounts of time away from content issues. Clearly, format errors are easily corrected, and teaching or learning format need not take up much class time. Ways to reduce TA energy devoted to this issue and foster student competence in APA format come from the literature.

Ault (1991) suggests an easy exercise to help students learn the components of a journal article. She takes a short, easily understood article with several paragraphs in

each section and scrambles the paragraphs. Students must decide which paragraphs go in each section and sequence the paragraphs. This simplistic exercise proved difficult for students but served to uncover problems before they were integrated into lab reports. Ault suggests that the time spent grading the exercise (10-15 minutes per student) is well-rewarded with reduced time spent correcting format errors in lab reports.

Cronan-Hillix (1988) takes a different approach by assigning either an "A" for an accurate results section of a student report or an "F" if even one mistake is included. If the results are accurate, the the entire paper is graded as a whole. Although MacDonald and Peterson (1991) argue that using such punitive methods misses the point, and instead teachers should focus on uncovering any conceptual misunderstandings, Cronan-Hillix (1991) contends that most errors are careless and don't represent conceptual misunderstanding. Thus she defends her policy as a way of emphasizing that "completeness, comprehension, and accuracy in analysis and writing are essential" (p. 101). Peden (1991) has applied this technique to the reference section of research reports after he has given students practice in recognizing and producing references. He noted that students gave high ratings to the practice exercises, but had ambivalent feelings about the grading policy.

Assigning exercises that allow students to practice APA format and accuracy in research could reduce errors on

papers and therefore reduce grading time for TA's. In addition, if these areas were taught through homework assignments, class time could be devoted to higher priority goals.

Another way to reduce TA time spent grading lab reports might be the use of reciprocal peer tutoring. Camplese and Mayo (1982) describe the "colleague swap," a method where students offer feedback for each other. The exercise is structured with specific guidelines and students earn points based on the quality of feedback they provide. Students benefit from seeing the process that other students go through as well as from editorial experience. Camplese and Mayo reported an improvement of one letter grade for term papers. Similar findings are reported by Fantuzzo, Dimeff, and Fox (1989), who demonstrated experimentally that reciprocal peer tutoring resulted in improved exam scores, distress reduction and greater student satisfaction. If such a system were employed, students could serve as rough draft editors and be instructed to read for grammatical and format errors, so TA's could concentrate on content and comprehension problems.

## Improving TA Performance

One area of the course that is currently problematic is the range in ability and motivation of teaching assistants who teach lab sections. This is an area where great improvement is possible since few solutions have been explored to date.

Several studies have demonstrated that mid-semester student evaluations, especially when accompanied by consultation, help to improving teaching. For example, Cohen and Herr (1982) used interactive feedback that involved use of a booklet to help interpret and use student evaluations. They varied types of mid-semester feedback and found that TA's self-reported skill ratings were significantly higher when mid-semester feedback included use of the booklet than under conditions where student evaluations were received alone or no feedback was received. But most importantly, instructors of both feedback groups were rated by students as higher on all teaching measures than were instructors who received no feedback. Mid-semester feedback might prove to be an easy and cost-effective way to improve TA performance.

A more elaborate way of improving TA performance might be to use a portion of the weekly TA meetings to teach TA's how to teach. Since teaching is a skill rather than an

innate ability, TA's might benefit from direct instruction. Pennington (1990) outlines a short training program for graduate student teachers of laboratory courses that focuses on practical aspects of teaching. Included are sections on starting the class, fielding a question that you cannot answer, dealing with different kinds of students (quiet, dominant), finding out how much students have learned. Graduate students found these workshops helpful. Other information from the literature could be incorporated into these teaching sessions. For example, Saas (1990) discussed teacher attributes that motivated students most, including instructor enthusiasm, relevance of course material and teacher preparedness. Willingham (1990) suggested ways to give effective feedback on student papers, and Strube (1991) outlined some general rules of effective and ineffective teaching.

Finally, an alternative teaching arrangement might improve TA performance. Pennington (1990) reported that her graduate students work in pairs in lab sections, taking turns running the lab and acting as support for the other TA. This pairing often involves placing novice TA's with experienced TA's. This in itself might improve teaching since TA's would be motivated by peer pressure to prepare for class, and novice TA's would have the support of experienced TA's.

A largely untapped resource for this course is the use of undergraduate TA's. Levine (1990) discussed the use of undergraduate TA's as peer tutors to review student writing. Oley (1992) found that students who consulted with peer tutors made significantly better grades on papers than students who did not consult and that paper grades increased as the number of consultations increased. Mendenhall and Wesley (1983) advocated expanding the role of the undergraduate TA to add student evaluation to more typical roles such as peer tutor and discussion leader. They found that by giving undergraduate TA's more responsibility, not only did students benefit, but TA's learned more themselves because they had to integrate their previous course experiences with the content of the course they taught.

The use of and success of Undergraduate TA's is not limited to small courses. Silverstein reported on the use of 40 undergraduate TA's in a course with enrollment of 1,100. The undergraduate TA's run mandatory discussion sections in which lecture material is discussed and simple projects and demonstrations are completed. TA's are responsible for writing and grading several essay questions.

In our course, undergraduate TA's could be used as peer tutors for writing assignments, to grade homework exercises, and to run the computer lab. By serving in these capacities, more exercises could be assigned, allowing for

ample practice of skills. Released of these time-consuming activities, graduate TA's and faculty could then focus on high priority items such as helping students develop meaningful research questions and projects. Thus, the possible benefits to both methods students and undergraduate TA's warrant the consideration of systematic use of undergraduate TA's.

## Structuring a Coherent Curriculum

If the preceding suggestions were incorporated into the curriculum of Methods of Inquiry in Psychology, what would the course be like, and how would it be different from the existing course? A structure similar to the existing curriculum could be retained. But a hierarchy of goals that emphasize theory of scientific method and research design and critical reading and thinking should shift emphasis toward greater comprehension of the research process.

Realistically, this would mean more carefully planned assignments focusing on critical reading of journal articles, library research and literature reviews. More homework in lecture and lab would be assigned, so students could practice skills and continually apply acquired skills to new situations. Hands-on experimentation would have to be simplified and take a subordinate role to theory of experimental design. Class time should be apportioned so that high priority goals receive the most emphasis, while

lower priority goals such as APA format are taught through efficiently constructed homework assignments. Principles of research design should be clearly and repeatedly emphasized so students do not lose sight of the reasons for doing the projects. Additionally, the points earned in the course should be shifted to reflect goals, such that theoretical elements receive more points than applied elements.

Beyond course content itself, TA's should be encouraged to become good teachers and supported in this process with teaching instruction. They should receive feedback and evaluation of their teaching where possible. In addition, new options should be reviewed to increase course resources such as use of undergraduate TA's.

In summary, students would become more involved with the design elements of research but conduct simpler, less time-consuming experiments. In this way, course priorities could be attended to, and students could put the connection between theory and application in proper perspective.

# CHAPTER 5

## SUMMARY

The purpose of this project was to conduct a formative analysis of the curriculum of Methods of Inquiry in Psychology at the University of Massachusetts, Amherst. The analysis involved uncovering current course goals by looking at student priority ratings of course elements, and comparing them with ideal goals that faculty favor for the course. Once the comparison was made and areas of discrepancy were noted, student ratings of course materials were reviewed to highlight effective methods and indicate problem areas. Ideas were offered for structuring a new curriculum based on a hierarchal organization of faculty espoused goals. Common elements of effective materials, solutions to course problems, and innovative techniques from the literature were incorporated into the discussion of the new curriculum.

# APPENDIX A

# SURVEYS

**FINAL STUDENT SURVEY**
**OF**
**METHODS IN PSYCHOLOGY**
**1991**

The following survey is being conducted to help evaluate the Methods in Psychology course. It is an attempt to get clear ideas about the present goals of the course and opinions about what the goals of the course should ideally be from several perspectives. The survey will be distributed to Methods' students, Methods' TA's and all Psychology faculty. Slightly different versions will be used for each group, but the main body of the survey will be the same so that the groups can be compared. The data analysis will serve as a partial fulfillment of the requirements for a Master's degree for Jeannie Watt.

Please take time to complete this survey. The Psychology department is considering the revision of this course and your input will be greatly appreciated. Survey responses are anonymous.

Student participation will be noted so we may assign points toward your grade, but survey results will not be analyzed until final course grades have been submitted. Please be candid and answer questions honestly.

THANK YOU FOR YOUR TIME!

Please score the objective portion of this survey on the OPSCAN sheet. DO NOT WRITE YOUR NAME on the OPSCAN sheet, RECORD YOUR STUDENT NUMBER INSTEAD.

All responses will be STRICTLY CONFIDENTIAL.

1. I am a: 1. Professor 2. TA
3. Student Student number_____.

Part I

Consider the following topics and skills. Please indicate what priority level should be given to each of these in the Methods in Psychology course. This is your chance to voice an opinion about what SHOULD or SHOULD NOT be a priority for this course. After having completed the course, what do you feel should be learned and experienced or omitted in the Methods in Psychology course? The scales allow you to indicate whether the topic should be a priority for lecture and/or laboratory.

SCALE:
High Priority....Moderately High....Moderately Low....Low Priority
.....1.....2.....3.....4.....

Please rate the priority that you would give to the following:

Emphasis on principles of research design
2. Lecture priority 1.....2.....3.....4.....
3. Lab priority.....1.....2.....3.....4.....

Emphasis on scientific method
4. Lecture priority 1.....2.....3.....4.....
5. Lab priority.....1.....2.....3.....4.....

Emphasis on scientific method applied to psychology
6. Lecture priority 1.....2.....3.....4.....
7. Lab priority.....1.....2.....3.....4.....

Emphasis on ethical issues pertaining to research
8. Lecture priority 1.....2.....3.....4.....
9. Lab priority.....1.....2.....3.....4.....

Emphasis on philosophy of science (How science works)
10. Lecture priority 1.....2.....3.....4.....
11. Lab priority.....1.....2.....3.....4.....

Acquisition of critical thinking skills (ability to analyze or evaluate ideas)

12. Lecture priority 1.....2.....3.....4.....
13. Lab priority.....1.....2.....3.....4.....

Acquisition of content synthesis skills (the ability to integrate material from several sources)

14. Lecture priority 1.....2.....3.....4.....
15. Lab priority.....1.....2.....3.....4.....

Acquisition of decision making skills concerning the synthesis of information and data (choosing what information to include in content synthesis)

16. Lecture priority 1.....2.....3.....4.....
17. Lab priority.....1.....2.....3.....4.....

Acquisition of General critical reading skills (ability to make informed judgments about the accuracy and value of written material)

18. Lecture priority 1.....2.....3.....4.....
19. Lab priority.....1.....2.....3.....4.....

Emphasis on critical reading and evaluation of research in psychology

20. Lecture priority 1.....2.....3.....4.....
21. Lab priority.....1.....2.....3.....4.....

Acquisition of skills for efficient library use

22. Lecture priority 1.....2.....3.....4.....
23. Lab priority.....1.....2.....3.....4.....

Acquisition of time management skills (ability to use allotted time efficiently)

24. Lecture priority 1.....2.....3.....4.....
25. Lab priority.....1.....2.....3.....4.....

Acquisition of organization skills (ability to efficiently complete tasks)

26. Lecture priority 1.....2.....3.....4.....
27. Lab priority.....1.....2.....3.....4.....

Acquisition of hypothesis formulation skills

28. Lecture priority 1.....2.....3.....4.....
29. Lab priority.....1.....2.....3.....4.....

Experience preparing research proposals

30. Lecture priority 1.....2.....3.....4.....
31. Lab priority.....1.....2.....3.....4.....

Hands on experience with experimental design planning

32. Lecture priority 1.....2.....3.....4.....
33. Lab priority.....1.....2.....3.....4.....

Experience with constructing research materials for use in experiments

34. Lecture priority 1.....2.....3.....4.....
35. Lab priority.....1.....2.....3.....4.....

Hands on experience with data collection (students conduct experiments)

36. Lecture priority 1.....2.....3.....4.....
37. Lab priority.....1.....2.....3.....4.....

Experience critiquing your own research designs

38. Lecture priority 1.....2.....3.....4.....
39. Lab priority.....1.....2.....3.....4.....

Emphasis on accurate data collection

40. Lecture priority 1.....2.....3.....4.....
41. Lab priority.....1.....2.....3.....4.....

Emphasis on mastery of statistical theory

42. Lecture priority 1.....2.....3.....4.....
43. Lab priority.....1.....2.....3.....4.....

Emphasis on correct application of statistics

44. Lecture priority 1.....2.....3.....4.....
45. Lab priority.....1.....2.....3.....4.....

Emphasis on correct interpretation of statistics

46. Lecture priority 1.....2.....3.....4.....
47. Lab priority.....1.....2.....3.....4.....

Emphasis on acquiring familiarity with computers (some experience with computers)

48. Lecture priority 1.....2.....3.....4.....
49. Lab priority.....1.....2.....3.....4.....

Emphasis on computer analysis (running statistics on computer)

50. Lecture priority 1.....2.....3.....4.....
51. Lab priority.....1.....2.....3.....4.....

Emphasis on accurate reporting of experimental results

52. Lecture priority 1.....2.....3.....4.....
53. Lab priority.....1.....2.....3.....4.....

Emphasis on acquiring familiarity with American Psychological Association (APA) journal format

54. Lecture priority 1.....2.....3.....4.....
55. Lab priority.....1.....2.....3.....4.....

Emphasis on becoming competent at APA style of writing

56. Lecture priority 1.....2.....3.....4.....
57. Lab priority.....1.....2.....3.....4.....

Acquisition of clear technical writing skills

58. Lecture priority 1.....2.....3.....4.....
59. Lab priority.....1.....2.....3.....4.....

Improvement of general writing skills

60. Lecture priority 1.....2.....3.....4.....
61. Lab priority.....1.....2.....3.....4.....

Experience with writing reports based on student research

62. Lecture priority 1.....2.....3.....4.....
63. Lab priority.....1.....2.....3.....4.....

Emphasis on application and generalization of knowledge to new situations

64. Lecture priority 1.....2.....3.....4.....
65. Lab priority.....1.....2.....3.....4.....

Emphasis on understanding broader significance of research findings

66. Lecture priority 1.....2.....3.....4.....
67. Lab priority.....1.....2.....3.....4.....

Experience presenting research findings to an audience

68. Lecture priority 1.....2.....3.....4.....
69. Lab priority.....1.....2.....3.....4.....

Emphasis on preparing students for graduate school

70. Lecture priority 1.....2.....3.....4.....
71. Lab priority.....1.....2.....3.....4.....

Emphasis on preparing students for professional careers in psychology

72. Lecture priority 1.....2.....3.....4.....
73. Lab priority.....1.....2.....3.....4.....

Emphasis on preparing students for professional careers outside of psychology

74. Lecture priority 1.....2.....3.....4.....
75. Lab priority.....1.....2.....3.....4.....

TO ADD OTHER TOPICS OF IMPORTANCE TO YOU, PLEASE TURN TO THE LAST PAGE OF THIS SURVEY.

PART II

What specific types of methodology should be covered in this course? Please rate the importance of the following examples and add any other methods you deem important.

Scale: Should be covered.....1
Covered if time allows.....2
Not important for this class.....3
I don't know what this is.....4

76. Naturalistic Observation.....1.....2.....3.....4.....
77. Single subject designs.....1.....2.....3.....4.....
78. Animal research.....1.....2.....3.....4.....
79. Between subjects group designs.1.....2.....3.....4.....
80. Within subjects group designs....1.....2.....3.....4.....
81. Mixed group designs.....1.....2.....3.....4.....
82. Survey research.....1.....2.....3.....4.....
83. Interview techniques.....1.....2.....3.....4.....
84. Independent project.....1.....2.....3.....4.....

TO ADD OTHER OPTIONS THAT YOU DEEM IMPORTANT, TURN TO THE LAST PAGE OF THIS SURVEY.

PART III

How do you expect the skills gained in this course to benefit you in the future? Using the following scale, rate the relevance of the skills you learned in this course.

Very Relevant Somewhat Relevant Not Relevant
.....1.....2.....3.....

How relevant will the skills be in terms of:

85. Job placement.....1.....2.....3.....
86. Future career.....1.....2.....3.....
87. Interpersonal skills.....1.....2.....3.....
88. Everyday life.....1.....2.....3.....
89. Graduate school.....1.....2.....3.....

How relevant was this course for your development of the following:

Very Relevant ..... Somewhat Relevant ..... Not Relevant
1 2 3

90. Written communication skills.....1.....2.....3....
91. Oral communication skills.....1.....2.....3....
92. Research skills.....1.....2.....3....
93. General understanding of science 1.....2.....3....
94. Computer skills.....1.....2.....3....
95. Time management skills.....1.....2.....3....
96. Critical reading skills.....1.....2.....3....

PART IV

Now that you have completed the course, please rate how you feel about the course on the following scales.

97. Unchallenged ..... Overwhelmed
.....1.....2.....3.....4.....5.....

98. Confident ..... Insecure
.....1.....2.....3.....4.....5.....

99. Bored ..... Excited
.....1.....2.....3.....4.....5.....

100. Positive ..... Negative
.....1.....2.....3.....4.....5.....

101. Happy ..... Unhappy
.....1.....2.....3.....4.....5.....

102. Relaxed ..... Anxious
.....1.....2.....3.....4.....5.....

103. Panicky ..... At Ease
.....1.....2.....3.....4.....5.....

104. Terrified ..... Self-Assured
.....1.....2.....3.....4.....5.....

PART IV

How would you rate your current skills or knowledge in the following areas? Please try to realistically assess your skill or knowledge level. This information will aid in course development. If lots of students have trouble in the same areas, we will try to focus more on these areas.

Scale:

Excellent.....Good.....Moderate.....Fair.....Poor
....5.....4.....3.....2.....1....

105. Principles of research design
.....5.....4.....3.....2.....1.....

106. Scientific method
.....5.....4.....3.....2.....1.....

107. Scientific method applied to psychology
.....5.....4.....3.....2.....1.....

108. Ethical issues pertaining to research
.....5.....4.....3.....2.....1.....

109. Philosophy of science (How science works)
.....5.....4.....3.....2.....1.....

110. Critical thinking skills (ability to analyze and evaluate ideas)
.....5.....4.....3.....2.....1.....

111. Content synthesis skills (ability to integrate material from several sources)
.....5.....4.....3.....2.....1.....

112. Decision making requiring synthesis of information and data (choosing what information to include in content synthesis)
.....5.....4.....3.....2.....1.....

113. General critical reading skills (ability to make informed judgments about the accuracy and value of written material)
.....5.....4.....3.....2.....1.....

114. Critical reading and evaluation of research in psychology
.....5.....4.....3.....2.....1.....

115. Efficient library skills
.....5.....4.....3.....2.....1.....

116. Time management skills (ability to use allotted time efficiently)
.....5.....4.....3.....2.....1.....

117. Organizational skills (ability to efficiently complete tasks)
.....5.....4.....3.....2.....1.....

118. Hypothesis formulation skills
.....5.....4.....3.....2.....1.....

119. Preparing research proposals
.....5.....4.....3.....2.....1.....

120. Hands-on experience with experimental design planning
.....5.....4.....3.....2.....1.....

121. Constructing research materials for use in experiments
.....5.....4.....3.....2.....1.....

122. Hands-on experience with data collection
.....5.....4.....3.....2.....1.....

123. Experience critiquing your own research designs
.....5.....4.....3.....2.....1.....

124. Accurate data collection
.....5.....4.....3.....2.....1.....

125. Mastery of statistical theory
.....5.....4.....3.....2.....1.....

126. Correct application of statistics
.....5.....4.....3.....2.....1.....

127. Correct interpretation of statistics
.....5.....4.....3.....2.....1.....

128. Familiarity with computers (some experience with computers)
.....5.....4.....3.....2.....1.....

129. Computer analysis (running statistics on computer)
.....5.....4.....3.....2.....1.....

130. Accurate reporting of experimental results
.....5.....4.....3.....2.....1.....

131. Familiarity with American Psychological Association (APA) journal format

.....5.....4.....3.....2.....1.....

132. Competent APA style writing

.....5.....4.....3.....2.....1.....

133. Clear technical writing

.....5.....4.....3.....2.....1.....

134. Writing reports based on student research

.....5.....4.....3.....2.....1.....

135. Writing reports based on student research

.....5.....4.....3.....2.....1.....

136. Ability to apply and generalize knowledge to new situations

.....5.....4.....3.....2.....1.....

137. Understanding broader significance of research

.....5.....4.....3.....2.....1.....

138. Presenting research findings to an audience

.....5.....4.....3.....2.....1.....

139. Preparation for graduate school

.....5.....4.....3.....2.....1.....

140. Preparation for professional careers outside of psychology

.....5.....4.....3.....2.....1.....

141. Preparation for professional careers outside of psychology

.....5.....4.....3.....2.....1.....

PART VI

Consider the following topics and the relative importance of covering each in the Methods in Psychology course. Please establish a rank order of importance; 1 = most important, 6 = least important.

_____Theory of experimental design and scientific method

_____Critical reading and thinking skills

_____Applied experimental design experience

_____Statistical analysis

_____Written communication

_____Generalization of knowledge and skills

PART VII
Please fill in the blanks.

1. When I think of taking this course, I feel _____.

2. When I think about using a computer, I feel _____.

3. When I think of doing statistics, I feel _____.

PART VIII
OPINION FORUM

1. In your opinion, should Methods in Psychology focus on students as consumers of research or focus on students as research practitioners?
(In other words, should we mainly focus on teaching you to understand and critique other researchers' work, or should we mainly focus on teaching you how to do your own research?)

2. Would students benefit from more conceptual work or more hands-on work?

3. How do you feel about the idea of integrating statistics and methods into a year long course?

Very Positive Positive Neutral Negative Very Negative

Comments:

5. If you have any suggestions for improving the course or if there are comments you would like to make, please record them below.

PART IX

If you completed this information on the initial survey, you may skip this part.

1. What is your GPA? _____

2. What psychology courses have you taken so far?

3. What did you score on the SAT? Verbal _____

Math_____

4. What was your grade in statistics? _____

5. Are you a: 1. Female 2. Male

ADD OTHER PRIORITY ITEMS FOR LAB OR LECTURE HERE: PLEASE CIRCLE THE PRIORITY LEVELS; DO NOT CODE THEM ON THE OPSCAN SHEET.

Other topic or skill:

Lecture priority 1.....2.....3.....4.....
Lab priority.....1.....2.....3.....4.....

Other topic or skill:

Lecture priority 1.....2.....3.....4.....
Lab priority.....1.....2.....3.....4.....

Other topic or skill:

Lecture priority 1.....2.....3.....4.....
Lab priority.....1.....2.....3.....4.....

ADD OTHER METHODS THAT COULD BE COVERED HERE: PLEASE CIRCLE THE IMPORTANCE LEVEL; DO NOT CODE THEM ON THE OPSCAN SHEETS.

Other method:
.....1.....2.....3.....

Other method:
.....1.....2.....3.....

Other method:
.....1.....2.....3.....

FACULTY SURVEY
OF
METHODS IN PSYCHOLOGY

The following survey is being conducted to help evaluate the Methods in Psychology course (Psych 241). It is an attempt to get clear ideas about the present goals of the course as well as opinions, from several perspectives, about what the goals of the course should ideally be. The survey will be distributed to Methods' students, Methods' TA's and all psychology faculty. Slightly different versions will be used for each group, but the main body of the survey will be the same so that the groups can be compared. The data analysis will serve as a partial fulfillment of the requirements for a Masters Degree for Jeannie Watt.

Please take time to complete this survey. The Psychology department is considering the revision of this course and your input will be greatly appreciated. Survey responses are anonymous.

Please return completed surveys to my Tobin mailbox.

THANK YOU FOR YOUR TIME

Jean Marie Watt

1. I am a: 1. Professor 2. TA 3. Student
Student Number ____.

PART I

Consider the following topics and skills. Please take this opportunity to voice an opinion about what SHOULD or SHOULD NOT be a priority for this course. What would you like students to learn and experience in the Methods in Psychology course? The scales allow you to indicate whether the topic should be a priority for lecture and/or laboratory.

Please score the objective portion of this survey on the OPSCAN sheet.

SCALE:
High Priority....Moderately High....Moderately Low....Low Priority
.....1.....2.....3.....4.....

Please rate the priority that you would give to the following:

Emphasis on principles of research design

2. Lecture priority 1.....2.....3.....4.....
3. Lab priority.....1.....2.....3.....4.....

Emphasis on scientific method

4. Lecture priority 1.....2.....3.....4.....
5. Lab priority.....1.....2.....3.....4.....

Emphasis on scientific method applied to psychology

6. Lecture priority 1.....2.....3.....4.....
7. Lab priority.....1.....2.....3.....4.....

Emphasis on ethical issues pertaining to research

8. Lecture priority 1.....2.....3.....4.....
9. Lab priority.....1.....2.....3.....4.....

Emphasis on philosophy of science (How science works)

10. Lecture priority 1.....2.....3.....4.....
11. Lab priority.....1.....2.....3.....4.....

Acquisition of critical thinking skills (ability to analyze or evaluate ideas)

12. Lecture priority 1.....2.....3.....4.....
13. Lab priority.....1.....2.....3.....4.....

Acquisition of content synthesis skills (the ability to integrate material from several sources)

14. Lecture priority 1.....2.....3.....4.....
15. Lab priority.....1.....2.....3.....4.....

Acquisition of decision making skills concerning the synthesis of information and data (choosing what information to include in content synthesis)

16. Lecture priority 1.....2.....3.....4.....
17. Lab priority.....1.....2.....3.....4.....

Acquisition of General critical reading skills (ability to make informed judgments about the accuracy and value of written material)

18. Lecture priority 1.....2.....3.....4.....
19. Lab priority.....1.....2.....3.....4.....

Emphasis on critical reading and evaluation of research in psychology

20. Lecture priority 1.....2.....3.....4.....
21. Lab priority.....1.....2.....3.....4.....

Acquisition of skills for efficient library use

22. Lecture priority 1.....2.....3.....4.....
23. Lab priority.....1.....2.....3.....4.....

Acquisition of time management skills (ability to use allotted time efficiently)

24. Lecture priority 1.....2.....3.....4.....
25. Lab priority.....1.....2.....3.....4.....

Acquisition of organization skills (ability to efficiently complete tasks)

26. Lecture priority 1.....2.....3.....4.....
27. Lab priority.....1.....2.....3.....4.....

Acquisition of hypothesis formulation skills

28. Lecture priority 1.....2.....3.....4.....
29. Lab priority.....1.....2.....3.....4.....

Experience preparing research proposals

30. Lecture priority 1.....2.....3.....4.....
31. Lab priority.....1.....2.....3.....4.....

Hands on experience with experimental design planning

32. Lecture priority 1.....2.....3.....4.....
33. Lab priority.....1.....2.....3.....4.....

Experience with constructing research materials for use in experiments

34. Lecture priority 1.....2.....3.....4.....
35. Lab priority.....1.....2.....3.....4.....

Hands on experience with data collection (students conduct experiments)

36. Lecture priority 1.....2.....3.....4.....
37. Lab priority.....1.....2.....3.....4.....

Experience critiquing your own research designs

38. Lecture priority 1.....2.....3.....4.....
39. Lab priority.....1.....2.....3.....4.....

Emphasis on accurate data collection

40. Lecture priority 1.....2.....3.....4.....
41. Lab priority.....1.....2.....3.....4.....

Emphasis on mastery of statistical theory

42. Lecture priority 1.....2.....3.....4.....
43. Lab priority.....1.....2.....3.....4.....

Emphasis on correct application of statistics

44. Lecture priority 1.....2.....3.....4.....
45. Lab priority.....1.....2.....3.....4.....

Emphasis on correct interpretation of statistics

46. Lecture priority 1.....2.....3.....4.....
47. Lab priority.....1.....2.....3.....4.....

Emphasis on acquiring familiarity with computers (some experience with computers)

48. Lecture priority 1.....2.....3.....4.....
49. Lab priority.....1.....2.....3.....4.....

Emphasis on computer analysis (running statistics on computer)

50. Lecture priority 1.....2.....3.....4.....
51. Lab priority.....1.....2.....3.....4.....

Emphasis on accurate reporting of experimental results

52. Lecture priority 1.....2.....3.....4.....
53. Lab priority.....1.....2.....3.....4.....

Emphasis on acquiring familiarity with American Psychological Association (APA) journal format

54. Lecture priority 1.....2.....3.....4.....
55. Lab priority.....1.....2.....3.....4.....

Emphasis on becoming competent at APA style writing

56. Lecture priority 1.....2.....3.....4.....
57. Lab priority.....1.....2.....3.....4.....

Acquisition of clear technical writing skills

58. Lecture priority 1.....2.....3.....4.....
59. Lab priority.....1.....2.....3.....4.....

Improvement of general writing skills

60. Lecture priority 1.....2.....3.....4.....
61. Lab priority.....1.....2.....3.....4.....

Experience with writing reports based on student research

62. Lecture priority 1.....2.....3.....4.....
63. Lab priority.....1.....2.....3.....4.....

Emphasis on application and generalization of knowledge to new situations

64. Lecture priority 1.....2.....3.....4.....
65. Lab priority.....1.....2.....3.....4.....

Emphasis on understanding broader significance of research findings

66. Lecture priority 1.....2.....3.....4.....
67. Lab priority.....1.....2.....3.....4.....

Experience presenting research findings to an audience

68. Lecture priority 1.....2.....3.....4.....
69. Lab priority.....1.....2.....3.....4.....

Emphasis on preparing students for graduate school

70. Lecture priority 1.....2.....3.....4.....
71. Lab priority.....1.....2.....3.....4.....

Emphasis on preparing students for professional careers in psychology

72. Lecture priority 1.....2.....3.....4.....
73. Lab priority.....1.....2.....3.....4.....

Emphasis on preparing students for professional careers outside of psychology

74. Lecture priority 1.....2.....3.....4.....
75. Lab priority.....1.....2.....3.....4.....

TO ADD OTHER TOPICS OF IMPORTANCE TO YOU, PLEASE TURN TO THE LAST PAGE OF THIS SURVEY.

PART II

What specific types of methodology should be covered in this course? Please rate the importance of the following examples and add any other methods you deem important.

Scale: Should be covered.....1
Covered if time allows.....2
Not important for this class.....3

76. Naturalistic Observation.....1.....2.....3

77. Single subject designs.....1.....2.....3

78. Animal research.....1.....2.....3

79. Between subjects group designs...1.....2.....3

80. Within subjects group designs.....1.....2.....3

81. Mixed group designs.....1.....2.....3

82. Surveys.....1.....2.....3

83. Interview techniques.....1.....2.....3

84. Independent project of students choice.....1.....2.....3

TO ADD OTHER OPTIONS TURN TO THE LAST PAGE OF THIS SURVEY.

PART III

In what areas would the skills gained in this course benefit students in the future? Using the following scale, rate the relevance of the skills students would acquire in this course.

Very Relevant Somewhat Relevant Not Relevant
.....1.....2.....3.....

How relevant will the skills be in terms of:

85. Job placement.....1.....2.....3.....

86. Future career.....1.....2.....3.....

87. Interpersonal skills.....1.....2.....3.....

88. Everyday life.....1.....2.....3.....

89. Graduate school.....1.....2.....3.....

How relevant was this course for your development of the following:

Very Relevant Somewhat Relevant Not Relevant
.....1.....2.....3.....

90. Written communication skills.....1.....2.....3....

91. Oral communication skills.....1.....2.....3....

92. Research skills.....1.....2.....3....

93. General understanding of science 1.....2.....3....

94. Computer skills.....1.....2.....3....

95. Time management skills.....1.....2.....3....

96. Critical reading skills.....1.....2.....3....

PART IV

Consider the following topics and the relative importance of covering each topic in the Methods in Psychology course. Please establish a rank order of importance; 1 = most important, 6 = least important.

_____Theory of experimental design and scientific method

_____Critical reading and thinking skills

_____Applied experimental design experience

_____Statistical analysis

_____Written communication

_____Generalization of knowledge and skills

PART V

Please fill in the blank:

When I think about teaching Methods, I feel _____.

PART VI

OPINION FORUM

1. In your opinion, should Methods in Psychology focus on students as consumer of research or focus on students as research practitioners (in other words, should we mainly focus on teaching you to understand and critique other researchers work, or should we mainly focus on teaching you how to do your own research?)

2. Would students benefit from more conceptual work or more hands-on work?

3. How do you feel about the idea of integrating Statistics and Methods in Psychology into a year long course?

Very Positive Positive Neutral Negative Very Negative

.....1.....2.....3.....4.....5.....

Comments:

4. Would professors benefit from such an arrangement?

5. Would students benefit from such an arrangement?

6. Would TA's benefit from such an arrangement?

7. How do you feel about integrating Statistics and Methods in Psychology into a year long course AND offering a 400 level laboratory course on general research design for motivated students?

Very Positive Positive Neutral Negative Very Negative

Comments:

8. Describe what you think the goals of this course should be and share some thoughts about why these are important goals to achieve.

9. What basic skills or knowledge should students have when the course is satisfactorily completed?

10. How should these assessed?

11. How well does the current curriculum achieve these goals?

PART VII
DEMOGRAPHICS

What division of Psychology are you in?

1. Div. I 2. Div. II 3. Div. III 4. Div. IV

Have you ever taught Methods? 1. Yes 2. No

If yes, how many years? _____

Have you ever taught Statistics? 1. Yes 2. No

If yes, how many years? _____

How many years have you been in this Psychology Department? _____

ADDITIONS TO PARTS I AND II

ADD OTHER PRIORITY ITEMS FOR LAB OR LECTURE HERE: PLEASE CIRCLE THE PRIORITY LEVELS; DO NOT CODE THEM ON THE OPSCAN SHEET.

Continued from page

Other:

Lecture priority 1.....2.....3.....4.....
Lab priority.....1.....2.....3.....4.....

Other:

Lecture priority 1.....2.....3.....4.....
Lab priority.....1.....2.....3.....4.....

Other:

Lecture priority 1.....2.....3.....4.....
Lab priority.....1.....2.....3.....4.....

ADD OTHER METHODS THAT COULD BE COVERED HERE: PLEASE CIRCLE THE IMPORTANCE LEVEL; DO NOT CODE ON OPSCAN SHEETS.

Continued from page

63. Other: ....1.....2.....3.....

64. Other: ....1.....2.....3.....

MATERIALS SURVEY
OF
METHODS IN PSYCHOLOGY

The following survey is being conducted to help evaluate the Methods in Psychology course. It is an attempt to get clear ideas about the value of specific materials used in Methods in Psychology. The data analysis will serve as a partial fulfillment of the requirements for a Master's Degree for Jeannie Watt.

Please take time to complete this survey. The Psychology department is considering the revision of this course and your input will be greatly appreciated. Survey responses are anonymous. No TA will have access to this information until course grades have been submitted.

THANK YOU FOR YOUR TIME!

Please code answers onto OPSCAN sheets.

1. Are you a: 1. Professor 2. TA 3. Student

Student Number _____

Lecture

2. The lecture format was easy to understand.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

3. I knew what was expected of me.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

4. The lectures were clearly presented.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

5. Important concepts were emphasized in lecture.]

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

6. Clear examples were used to illustrate concepts in lecture.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

7. The examples helped me understand the lecture concepts.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

8. The lectures contained: 1. Too many examples
2. About the right number of examples 3. Not enough examples

9. The lecture material was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Too Easy | Easy | About Right | Difficult | Too Difficult |

10. The example midterm exam illustrated what was expected on the exam.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

11. Reviewing the sample exam probably improved my score on the midterm.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

12. The midterm was a fair exam.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

Comments:

13: The concepts presented in lecture were illustrated in the lab projects.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

14. The book was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat Unclear | Confusing |

How could the lecture be improved?

Homework

15. The homework helped me understand the statistics used in the lab reports.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

16. The homework helped me understand the lecture material.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

17. There should be more homework directly related to lecture concepts.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

18. The amount of homework assigned was:

1. Too much 2. About right 3. Too difficult

Homework 1: Chi-square and Handouts

19. 1. Clear 2. Unclear
20. 1. Helpful 2. Not Helpful
21. 1. Too Easy 2. About Right 3. Too Difficult

22. Did you understand the homework?

1. Yes 2. No

Homework 2: 1-Way ANOVA and Handouts

23. 1. Clear 2. Unclear
24. 1. Helpful 2. Not Helpful
25. 1. Too Easy 2. About Right 3. Too Difficult

26. Did you understand the homework?

1. Yes 2. No

Homework 3: 2-Way Between Subject ANOVA and Handouts

27. 1. Clear 2. Unclear
28. 1. Helpful 2. Not Helpful
29. 1. Too Easy 2. About Right 3. Too Difficult

30. Did you understand the homework?

1. Yes 2. No

Homework 4: 2-Way Mixed Design ANOVA and Handouts

31. 1. Clear 2. Unclear
32. 1. Helpful 2. Not Helpful
33. 1. Too Easy 2. About Right 3. Too Difficult

34. Did you understand the homework?
1. Yes 2. No

35. I'm glad I had a chance to use a computer in this course.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

36. Computers should not be a required part of this course.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

37. Even with the handouts, using the computer confused me.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

Comments:

Library

38. The lecture on library sources was helpful.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

39. The Librarians were helpful.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

40. Library skills learned in methods will be helpful in other classes.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

41. Should future students be required to use the library as you did?

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

42. Rate your confidence in your library skills.
1. Unconfident 2. Somewhat unconfident
3. Somewhat confident 4. Confident

43. How often did you use reference materials in the library prior to this class?
1. All the time 2. Often 3. Seldom 4. Never

44. Prior to this course, had you ever used a primary source (journal article) in your course work?

1. Yes 2. No

Rank the following resources in terms of how often you used them[1 = most often, 7 (or high #) = rarely, 0 = never used]:

45. _____Silver Platter computer system
46. _____ERIC computer system
47. _____Psychological Abstracts
48. _____Social Science Citation Index
49. _____Sociology Abstracts
50. _____Card Catalog
51. _____On-Line computer catalog

Do you consider the library part of the course worthwhile?

What was the most difficult part of library research?

Looking back, what else would you have liked to learn about the library?

Naturalistic Observation

52. The format of the Naturalistic Observation lab project was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat unclear | Confusing |

Comments:

53. The goals of the Naturalistic Observation were clear.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

54. I knew what was expected of me.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

55. Overall, the difficulty level of the Naturalistic Observation lab was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Too Easy | Easy | About Right | Difficult | Too Difficult |

56. The calculation of the Chi-Square statistic was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Very Easy | Easy | Average | Difficult | Very Difficult |

57. Did you do this calculation in your statistics course?
1. Yes 2. No

58. The explanation of the statistical interpretation for the Naturalistic Observation was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat Unclear | Confusing |

59. The presentation of the write-up for the Naturalistic Observation was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat Unclear | Confusing |

60. After instruction, doing the write-up for the Naturalistic Observation lab was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Very Easy | Easy | Average | Difficult | Very Difficult |

Did you have trouble with any of the following sections of the paper?

| | | | |
|---|---|---|---|
| 61. | Abstract | 1. Yes | 2. No |
| 62. | Introduction | 1. Yes | 2. No |
| 63. | Method | 1. Yes | 2. No |
| 64. | Results | 1. Yes | 2. No |
| 65. | Discussion | 1. Yes | 2. No |

66. Did you meet with your TA to review a rough draft?
1. Yes 2. No

67. Before meeting with my TA, I had _____% of my rough draft completed.
1. NA 2. 25% or less 3. 50% 4. 75% 5. 100%

68. Meeting with my TA was:
1. N/A 2. Very helpful 3. Somewhat helpful
4. Not Very helpful 5. Not helpful at all

69. My TA answered my questions clearly:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

70. My TA made specific comments on my paper:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

71. What grade did you get on the Naturalistic Observation Paper?
1. <30pts 2. 30-34pts 3. 34.1-38pts 4. 38.1-44pts
5. >44pts

72. Did this project help you to understand the general concepts of naturalistic Observation?
1. Yes 2. Somewhat 3. Not Really 4. Not at all

73. How confident are you in your ability to apply the knowledge gained from the Naturalistic Observation project to other projects requiring similar designs?
1. Unconfident 2. Somewhat unconfident 3. Somewhat confident
4. Confident

What did you learn from this project?

What still confuses you? (Or what confused you upon completion of this project?)

How could the Naturalistic Observation Lab be improved?

Additional Comments:

Survey

74. The format of the Survey lab project was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat unclear | Confusing |

Comments:

75. The goals of the Survey lab were clear.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

76. I knew what was expected of me.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

77. Overall, the difficulty level of the Survey lab was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Too easy | Easy | Average | Difficult | Very Difficult |

78. The calculation of the 1-way ANOVA statistic was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Very easy | Easy | Average | Difficult | Very Difficult |

79. Did you do this calculation in your statistics course?
1. Yes 2. No

80. The explanation of the statistical interpretation for the Survey was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat unclear | Confusing |

81. The presentation of the write-up for the Survey was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat unclear | Confusing |

82. After instruction, doing the write-up for the Survey lab was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Very easy | Easy | Average | Difficult | Very Difficult |

Did you have trouble with any of the following sections of the paper?

| | | | |
|---|---|---|---|
| 83. | Abstract | 1. Yes | 2. No |
| 84. | Introduction | 1. Yes | 2. No |
| 85. | Method | 1. Yes | 2. No |
| 86. | Results | 1. Yes | 2. No |
| 87. | Discussion | 1. Yes | 2. No |

88. Did you meet with your TA to review a rough draft?
1. Yes 2. No

89. Before meeting with my TA, I had _____% of my rough draft completed.
1. NA 2. 25% or less 3. 50% 4. 75% 5. 100%

90. Meeting with my TA was:
1. N/A 2. Very helpful 3. Somewhat helpful
4. Not Very helpful 5. Not helpful at all

91. My TA answered my questions clearly:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

92. My TA made specific comments on my paper:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

93. What grade did you get on the Survey Paper?
1. <30pts 2. 30-34pts 3. 34.1-38pts 4. 38.1-44pts
5. >44pts

94. Did this project help you to understand the general concepts of naturalistic Observation?
1. Yes 2. Somewhat 3. Not Really 4. Not at all

95. How confident are you in your ability to apply the knowledge gained from the Survey project to other projects requiring similar designs?
1. Unconfident 2. Somewhat unconfident 3. Somewhat confident
4. Confident

What did you learn from this project?

What still confuses you? (Or what confused you upon completion of this project?)

How could the Survey Lab be improved?

Additional Comments:

Group Design

96. The format of the Group Design lab project was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat unclear | Confusing |

Comments:

97. The goals of the Group Design lab were clear.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

98. I knew what was expected of me.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

99. Overall, the difficulty level of the Group Design lab was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Too easy | Easy | Average | Difficult | Very Difficult |

100. The calculation of the 2-way Mixed design ANOVA statistic was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Very easy | Easy | Average | Difficult | Very Difficult |

101. Did you do this calculation in your statistics course?
1. Yes 2. No

102. The explanation of the statistical interpretation for the Group Design was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat unclear | Confusing |

103. The presentation of the write-up for the Group Design was:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Excellent | Adequate | Somewhat unclear | Confusing |

104. After instruction, doing the write-up for the Group Design lab was:

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Very easy | Easy | Average | Difficult | Very Difficult |

Did you have trouble with any of the following sections of the paper?

| | | | |
|---|---|---|---|
| 105. | Abstract | 1. Yes | 2. No |
| 106. | Introduction | 1. Yes | 2. No |
| 107. | Method | 1. Yes | 2. No |
| 108. | Results | 1. Yes | 2. No |
| 109. | Discussion | 1. Yes | 2. No |

110. Did you meet with your TA to review a rough draft?
1. Yes 2. No

111. Before meeting with my TA, I had _____% of my rough draft completed.
1. NA 2. 25% or less 3. 50% 4. 75% 5. 100%

112. Meeting with my TA was:
1. N/A 2. Very helpful 3. Somewhat helpful
4. Not Very helpful 5. Not helpful at all

113. My TA answered my questions clearly:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

114. My TA made specific comments on my paper:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

115. What grade did you get on the Group Design Paper?
1. <60pts 2. 60-67pts 3. 68-77.9pts 4. 78-87.9pts
5. >88pts

116. Did this project help you to understand the general concepts of naturalistic Observation?
1. Yes 2. Somewhat 3. Not Really 4. Not at all

117. How confident are you in your ability to apply the knowledge gained from the Group Design project to other projects requiring similar designs?
1. Unconfident 2. Somewhat unconfident 3. Somewhat confident
4. Confident

What did you learn from this project?

What still confuses you? (Or what confused you upon completion of this project?)

How could the Group Design Lab be improved?

Additional Comments:

General lab info

118. Individual meetings with TA's are an important part of Methods lab.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

119. TA meetings were valuable.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

120. Write-up checklists were helpful.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

121. in general, the handouts were helpful.

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Strongly Agree | Agree | Disagree | Strongly Disagree |

Were any particular handouts more helpful or less helpful than others?

What other kinds of handouts would help?

122. On average, what percent of the lab period (1hr, 15min) did your lab section use up?

1. <50% 2. 50% 3. 75% 4. 100%

Was the lab discussion section:

| | | | | |
|---|---|---|---|---|
| 123. | Informative | 1. Yes | 2. Somewhat | 3. No |
| 124. | Enjoyable | 1. Yes | 2. Somewhat | 3. No |
| 125. | Worthwhile | 1. Yes | 2. Somewhat | 3. No |
| 126. | A waste of time | 1. Yes | 2. Somewhat | 3. No |
| 127. | Boring | 1. Yes | 2. Somewhat | 3. No |
| 128. | Repetitive | 1. Yes | 2. Somewhat | 3. No |
| 129. | Important for my Education | 1 Yes | 2. Somewhat | 3. No |

130. Which lab project did you enjoy the most?

1. Naturalistic Observation 2. Survey 3. Group Design
4. Independent Project

131. Which lab project did you enjoy least?
1. Naturalistic Observation 2. Survey 3. Group Design
4. Independent Project

132. Which lab project did you learn the most from?
1. Naturalistic Observation 2. Survey 3. Group Design
4. Independent Project

133. What percent of labs did you attend?
1. 90-100% 2. 80-89% 3. 70-79%
4. 60-69% 5. Less than 60%

What would you think of one 3hr lab period per week?

Do you think we could shorten the lab time to 2hrs per week and still cover the same material?

If you had to cut out one part of the course, what would you cut?

THANK YOU FOR YOUR TIME. This will all be over soon.

# APPENDIX B

# DATA TABLES OF SURVEY RESPONSES

**Table B.1**

**Part I: Item Means for Topic Area One; Theory of Experimental Design and Scientific Method**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lecture | | |
| Emphasis on principles of research design | 3.13 | 3.12 | 3.91 |
| Emphasis on scientific method | 2.91 | 2.97 | 3.86 |
| Emphasis on scientific method applied to psychology | 3.20 | 3.26 | 3.58 |
| Emphasis on ethical issues pertaining to research | 3.17 | 2.86 | 3.05 |
| Emphasis on philosophy of science | 2.57 | 2.37 | 2.72 |

**Note. The higher the mean, the higher the priority level.**

**Continued, next page**

**Table B.1 continued**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lab | | |
| Emphasis on principles of research design | 3.38 | 3.23 | 3.29 |
| Emphasis on scientific method | 3.09 | 3.00 | 3.53 |
| Emphasis on scientific method applied to psychology | 3.25 | 3.11 | 3.34 |
| Emphasis on ethical issues pertaining to research | 2.74 | 2.46 | 2.05 |
| Emphasis on philosophy of science | 2.08 | 1.98 | 1.91 |

**Note. The higher the mean, the higher the priority level.**

**Table B.2**

**Part I: Item Means for Topic Area Two; Critical Reading and Thinking**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lecture | | |
| Acquisition of critical thinking skills | 3.01 | 2.99 | 3.34 |
| Acquisition of content synthesis skills | 2.78 | 2.32 | 2.77 |
| Acquisition of decision-making skills concerning the synthesis of information and data | 2.70 | 2.23 | 2.77 |
| Acquisition of general critical reading skills | 2.86 | 2.51 | 3.10 |
| Emphasis on critical reading and evaluation of research in psychology | 2.96 | 2.60 | 3.48 |
| Acquisition of skills for efficient library use | 2.00 | 1.80 | 2.29 |

**Note. The higher the mean, the higher the priority level.**

**Continued, next page**

**Table B.2 continued**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lab | | |
| Acquisition of critical thinking skills | 3.46 | 3.29 | 3.58 |
| Acquisition of content synthesis skills | 3.28 | 3.46 | 2.81 |
| Acquisition of decision-making skills concerning the synthesis of information and data | 3.34 | 3.42 | 2.86 |
| Acquisition of general critical reading skills | 3.07 | 3.13 | 2.72 |
| Emphasis on critical reading and evaluation of research in psychology | 2.95 | 3.06 | 3.10 |
| Acquisition of skills for efficient library use | 3.06 | 3.23 | 2.58 |

**Note. The higher the mean, the higher the priority level.**

**Table B.3**

**Part I: Item Means for Topic Area Three; Applied Experimental Design**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lecture | | |
| Acquisition of hypothesis formulation skills | 3.04 | 2.86 | 3.24 |
| Experience preparing research proposals | 2.54 | 2.20 | 2.58 |
| Hands-on experience with experimental design planning | 2.35 | 2.04 | 2.48 |
| Experience with conducting research materials for use in experiments | 2.46 | 2.19 | 1.72 |
| Hands-on experience with data collection | 2.17 | 1.83 | 1.77 |
| Experience critiquing your own research designs | 2.50 | 2.02 | 2.29 |
| Emphasis on accurate data collection | 3.04 | 2.73 | 3.20 |

**Note. The higher the mean, the higher the priority level.**

**Continued, next page**

**Table B.3 continued**

| Item | Group | | |
|---|---|---|---|
| | **Initial Student (n=102)** | **Final Student (n=91)** | **Faculty (n=21)** |
| | Lab | | |
| Acquisition of hypothesis formulation skills | 3.40 | 3.49 | 3.34 |
| Experience preparing research proposals | 3.53 | 3.52 | 2.81 |
| Hands-on experience with experimental design planning | 3.68 | 3.70 | 3.53 |
| Experience with conducting research materials for use in experiments | 3.45 | 3.46 | 3.10 |
| Hands-on experience with data collection | 3.65 | 3.68 | 3.48 |
| Experience critiquing your own research designs | 3.60 | 3.52 | 3.53 |
| Emphasis on accurate data collection | 3.57 | 3.54 | 3.53 |

**Note. The higher the mean, the higher the priority level.**

**Table B.4**

**Part I: Item Means for Topic Area Four; Statistics and Computers**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lecture | | |
| Emphasis on mastery of statistical theory | 3.19 | 3.16 | 2.43 |
| Emphasis on correct application of statistics | 3.28 | 3.18 | 3.05 |
| Emphasis on correct interpretation of statistics | 3.32 | 3.11 | 3.29 |
| Emphasis on acquiring familiarity with computers | 2.10 | 1.82 | 1.86 |
| Emphasis on computer analysis | 2.25 | 1.81 | 1.91 |

**Note. The higher the mean, the higher the priority level.**

**Continued, next page**

**Table B.4 continued**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lab | | |
| Emphasis on mastery of statistical theory | 2.97 | 2.97 | 2.43 |
| Emphasis on correct application of statistics | 3.19 | 3.25 | 3.05 |
| Emphasis on correct interpretation of statistics | 3.27 | 3.43 | 3.34 |
| Emphasis on acquiring familiarity with computers | 3.22 | 3.52 | 3.05 |
| Emphasis on computer analysis | 3.33 | 3.53 | 2.81 |

**Note. The higher the mean, the higher the priority level.**

**Table B.5**

**Part I: Item Means for Topic Area Five; Written Communication**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lecture | | |
| Emphasis on accurate reporting of experimental results | 3.04 | 2.64 | 3.39 |
| Emphasis on acquiring familiarity with American Psychological Association (APA) journal format | 2.82 | 2.30 | 1.77 |
| Emphasis on becoming competent at APA-style writing | 2.64 | 2.13 | 1.53 |
| Acquisition of clear technical writing skills | 2.60 | 2.09 | 2.43 |
| Improvement of general writing skills | 2.10 | 1.72 | 2.10 |
| Experience with writing reports based on student research | 2.34 | 1.78 | 2.05 |

**Note. The higher the mean, the higher the priority level.**

**Continued, next page**

**Table B.5 continued**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lab | | |
| Emphasis on accurate reporting of experimental results | 3.57 | 3.67 | 3.67 |
| Emphasis on acquiring familiarity with American Psychological Association (APA) journal format | 3.33 | 3.35 | 2.67 |
| Emphasis on becoming competent at APA-style writing | 3.42 | 3.48 | 2.67 |
| Acquisition of clear technical writing skills | 3.46 | 3.55 | 3.53 |
| Improvement of general writing skills | 2.77 | 2.98 | 3.00 |
| Experience with writing reports based on student research | 3.50 | 3.38 | 3.20 |

**Note. The higher the mean, the higher the priority level.**

**Table B.6**

**Part I: Item Means for Topic Area Six; Generalization of Skills and Knowledge**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lecture | | |
| Emphasis on application and generalization of knowledge to new situations | 3.18 | 2.90 | 2.53 |
| Emphasis on understanding broader significance of research findings | 3.36 | 3.02 | 3.29 |
| | Lab | | |
| Emphasis on application and generalization of knowledge to new situations | 3.02 | 2.92 | 2.43 |
| Emphasis on understanding broader significance of research findings | 2.96 | 2.86 | 2.62 |

**Note. The higher the mean, the higher the priority level.**

**Table B.7**

**Part I: Item Means for Miscellaneous Items**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lecture | | |
| Experience presenting research findings to an audience | 2.21 | 1.99 | 1.39 |
| Emphasis on preparing students for graduate school | 2.27 | 2.02 | 1.67 |
| Emphasis on preparing students for professional careers in psychology | 2.16 | 1.69 | 1.48 |
| Emphasis on preparing students for professional careers outside of psychology | 2.87 | 2.55 | 2.34 |
| Acquisition of time-management skills | 3.12 | 2.70 | 2.24 |
| Acquisition of organizational skills | 2.28 | 2.00 | 2.10 |

**Note. The higher the mean, the higher the priority level.**

**Continued, next page**

**Table B.7 continued**

| Item | Group | | |
|---|---|---|---|
| | Initial Student (n=102) | Final Student (n=91) | Faculty (n=21) |
| | Lab | | |
| Experience presenting research findings to an audience | 2.62 | 2.73 | 1.43 |
| Emphasis on preparing students for graduate school | 2.96 | 2.93 | 1.91 |
| Emphasis on preparing students for professional careers in psychology | 2.87 | 2.62 | 1.86 |
| Emphasis on preparing students for professional careers outside of psychology | 2.91 | 2.65 | 2.39 |
| Acquisition of time-management skills | 3.00 | 2.70 | 2.20 |
| Acquisition of organizational skills | 2.16 | 1.98 | 1.90 |

**Note. The higher the mean, the higher the priority level.**

**Table B.8**

**Part II: Methodology Priority Ratings**

| Methodology | Group | | |
|---|---|---|---|
| | Initial Student (n=105) | Final Student (n=95) | Faculty (n=21) |
| Naturalistic Observation | 1.15 | 1.10 | 1.23 |
| Single Subject Designs | 1.59 | 1.31 | 1.76 |
| Animal Research | 1.88 | 2.35 | 1.95 |
| Between-Subjects Group Designs | 1.99 | 1.23 | 1.00 |
| Within-Subjects Group Designs | 1.94 | 1.24 | 1.14 |
| Mixed-Group Designs | 2.00 | 1.23 | 1.71 |
| Survey Research | 1.19 | 1.22 | 1.52 |
| Interview Techniques | 1.42 | 1.80 | 2.23 |
| Independent Projects | 1.67 | 1.44 | 1.89 |

**Note. The lower the score, the higher the priority.**

**Table B.9**

**Part Three: Relevancy**

| Category | Group | | |
|---|---|---|---|
| | Initial Student (n=105) | Final Student (n=95) | Faculty (n=21) |
| Job Placement | 2.00 | 2.15 | 1.90 |
| Future Career | 1.70 | 1.93 | 1.57 |
| Interpersonal Skills | 2.33 | 2.52 | 2.90 |
| Everyday Life | 2.49 | 2.63 | 1.95 |
| Graduate School | 1.36 | 1.42 | 1.23 |

**Note. The lower the score, the higher the relevancy.**

**Table B.10**

**Part Three: Skills-Development Relevancy**

| Skills | Group | | |
|---|---|---|---|
| | Initial Student (n=105) | Final Student (n=95) | Faculty (n=21) |
| Written Communication | 1.50 | 1.58 | 1.23 |
| Oral Communication | 2.32 | 2.58 | 2.28 |
| Research | 1.15 | 1.20 | 1.04 |
| General Understanding of Science | 1.79 | 1.96 | 1.14 |
| Computer | 1.93 | 1.70 | 1.95 |
| Time Management | 2.07 | 2.15 | 2.61 |
| Critical Reading | 1.88 | 2.03 | 1.57 |

**Note. The lower the score, the higher the relevancy.**

**Table B.11**

**Part IV: Semantic Differential**

| Word Pairs | Group | |
|---|---|---|
| | Initial Student (n=105) | Final Student (n=95) |
| Unchallenged/Overwhelmed | 3.86 | 4.05 |
| Confident/Insecure | 3.04 | 2.77 |
| Bored/Excited | 3.05 | 3.02 |
| Positive/Negative | 2.00 | 2.08 |
| Happy/Unhappy | 2.09 | 2.24 |
| Relaxed/Anxious | 2.28 | 2.60 |
| Panicky/At Ease | 1.81 | 1.74 |
| Terrified/Self-Assured | 2.41 | 2.73 |

**Note. The semantic differentials were presented on a five-point scale. Lower numbers represent responses closer to the first adjective; higher number represent responses closer to the second adjective.**

**Table B.12**

**Part V: Achievement Ratings of Topic Area One; Theory of Experimental Design and Scientific Method**

| Item | Group | |
|---|---|---|
| | Initial Student (n=105) | Final Student (n=96) |
| Principles of Research Design | 2.76 | 2.68 |
| Scientific Method | 2.94 | 3.36 |
| Scientific Method Applied to Psychology | 2.75 | 2.80 |
| Ethical Issues Pertaining to Research | 3.15 | 3.31 |
| Philosophy of Science (How Science Works) | 2.67 | 2.96 |

**Note. The higher the number, the greater the achievement.**

**Table B.13**

**Part V: Achievement Ratings of Topic Area Two; Critical Reading and Thinking**

| Item | Group | |
|---|---|---|
| | Initial Student (n=102) | Final Student (n=96) |
| Critical Thinking Skills (Ability to Analyze and Evaluate Ideas) | 3.14 | 3.41 |
| Content Synthesis Skills (Ability to Intergrate Material from Several Sources) | 3.00 | 3.43 |
| Decision-making Requiring Synthesis of Information and Data (Choosing What Information to Include in Content Synthesis) | 2.69 | 3.26 |
| General Critical Reading Skills (Ability to Make Informed Judgments About the Accuracy And Value of Written Material) | 3.07 | 3.15 |
| Critical Reading and Evaluation of Research in Psychology | 2.88 | 3.33 |
| Efficient Library Skills | 3.02 | 3.50 |

**Note. The higher the number, the greater the achievement.**

**Table B.14**

**Part V: Achievement Ratings of Topic Area Three; Applied Experimental Design**

| Item | Group | |
|---|---|---|
| | Initial Student (n=105) | Final Student (n=96) |
| Hypothesis Formulation Skills | 2.85 | 3.54 |
| Preparing Research Proposals | 2.45 | 3.20 |
| Hands-on Experience with Experimental Design Planning | 2.13 | 3.31 |
| Constructing Research Materials for Use in Experiments | 2.29 | 3.04 |
| Hands-on Experience with Data Collection | 2.47 | 3.47 |
| Experience Critiquing Your Own Research Designs | 2.31 | 3.04 |
| Accurate Data Collection | 2.77 | 3.42 |

**Note. The higher the number, the greater the achievement.**

**Table B.15**

**Part V: Achievement Ratings of Topic Area Four; Statistics and Computers**

| Item | Group | |
|---|---|---|
| | Initial Student (n=105) | Final Student (n=96) |
| Mastery of Statistical Theory | 2.76 | 2.85 |
| Correct Application of Statistics | 2.80 | 2.97 |
| Correct Interpretation of Statistics | 2.79 | 3.00 |
| Familiarity with Computers (Some Experience with Computers) | 2.69 | 3.32 |
| Computer Analysis (Running Statistics on Computer) | 1.93 | 3.41 |

**Note. The higher the number, the greater the achievement.**

**Table B.16**

**Part V: Achievement Ratings of Topic Area Five; Written Communication**

| Item | Group | |
|---|---|---|
| | Initial Student (n=105) | Final Student (n=96) |
| Accurate Reporting of Experimental Results | 2.68 | 3.24 |
| Familiarity with APA Journal Format | 2.18 | 3.41 |
| Competent APA-Style Writing | 2.13 | 3.20 |
| Clear Technical Writing | 2.73 | 3.12 |
| General Writing Skills | 3.23 | 3.10 |
| Writing Reports Based on Student Research | 2.68 | 3.27 |

**Note. The higher the number, the greater the achievement.**

**Table B.17**

**Part V: Achievement Ratings of Topic Area Six; Generalization of Skills and Knowledge**

| Item | Group | |
|---|---|---|
| | Initial Student (n=105) | Final Student (n=96) |
| Ability to Apply and Generalize Knowledge to New Situations | 3.16 | 3.17 |
| Understanding Broader Significance of Research | 3.09 | 3.21 |

**Note. The higher the number, the greater the achievement.**

**Table B.18**

**Part V: Achievement Ratings of Topic Area Seven; Time Management and Organization**

| Item | Group | |
|---|---|---|
| | Initial Student (n=105) | Final Student (n=96) |
| Time Management Skills | 3.13 | 3.23 |
| Organizational Skills | 2.82 | 3.42 |

**Note. The higher the number, the greater the achievement.**

**Table B.19**

**Part V: Achievement Ratings of Topic Area Eight; Preparation for Future Career**

| Item | Group | |
|---|---|---|
| | Initial Student (n=105) | Final Student (n=96) |
| Preparation for Graduate School | 2.64 | 3.03 |
| Preparation for Professional Careers in Psychology | 2.75 | 2.87 |
| Preparation for Professional Careers outside of Psychology | 2.83 | 2.65 |

**Note. The higher the number, the greater the achievement.**

# APPENDIX C

# MATERIALS SURVEY

# OPEN-ENDED RESPONSES

## LECTURE COMMENTS

**Item 12: The midterm was a fair exam.**

1. Not representative of material covered.
2. The graphing question was a complete surprise.
3. The professor never went over how to graph an interaction and that was not fair. (n=6)
4. The question on graphing was out of left field; the multiple choice were silly.
5. The multiple choice questions were too specific. Without having them on the practice exam, it was difficult.
6. Multiple choice didn't test what you knew, they were difficult to understand.
7. Very picky questions, not enough time to complete the exam.
8. I feel partial credit should have been given on the essay problems.
9. If the entire class fails, how can that be considered fair?
10. No one passed with a high grade.
11. Multiple choice were fair, one essay was unfair.
12. Yes, except for one of the problems, which we were never taught.
13. All that was needed was to study the sample exam and book, no lecture experience was needed.
14. Fair but hard. even with review.

**Question: How could the lecture be improved?**

1. Going over material concerning lab reports before they are passed in and not after we need the information.
2. Drop lecture/different professor.
3. I don't think there should be one. I think there should be a lab and methods should be a 3 credit course.
4. Use puppets.
5. Should meet 3 times a week instead of 2.
6. Make stats and methods a combined one year course.
7. Have the professor improve teaching methods.
8. Smaller lecture, more sections.
9. Perhaps give an outline of lecture- at least of the statistics being covered.
10. Have handouts when a lot of numbers are covered so that the students can follow better.
11. If midterms and finals were worth more students would be more motivated to go to class.
12. The professor should go slower at difficult sections.
13. Correlate lectures with labs and discuss more in detail the concepts and material in a lab research paper.

14. The lecture could have referred more to specific labs we were working on.
15. It should coincide with lab. (n=3)
16. Make it interesting and have the lecture 'go with' the right lab.
17. Give examples/problems as ungraded optional homework. Refer to lab homeworks to clarify concepts- integrate the two parts of the course more.
18. Correlate it with lab and book. (n=2)
19. Stick to the book. It may be boring but the material is difficult. Although the professor tried hard to be clear, the material was terribly confusing. I think that it had to do with the content, but it's better when you have a book to refer to.
20. Involve the book. (n=2)
21. Relate lecture more to reading material.(n=2)
22. The lecture should, somewhat, cover the basic outline of the book and what pages to refer to.
23. It seems that grades are based on lab papers and we learn to write them in lab. Lecture doesn't seem that important. I think there should be more of a balance of material presented in lab and lecture.
24. Cover APA writing style more since labs are 75% of the grade.
25. I thought lecture was good despite the material presented.
26. Lecture needs clarity.
27. Give more examples the students can relate to. (n=6)
28. More clear examples, clearer explanations. (n=2)
29. More examples- easy examples to clarify difficult material. (n=2)
30. Use clearer examples (n=2)
31. Less intimidation and more interesting examples. (n=2)
32. Use more examples. Stress what to copy down. (n=2)
33. Material needs to be complemented with readings of actual studies that give examples (possibly from journals). Also, practice problems should be given to help us use the material.
34. More specific examples of a research problem in stead of one long example.
35. When going over concepts and examples, the professor should go more slowly. Some of the examples were long and complex. If lecture material could be used for the labs it would help because we spend so much time on labs.
36. The examples used were good but not consistent. Sometimes we would start with one example and switch around to others and then come back to the first example 2-3 lectures after it was first presented. It made it hard to apply the procedures to new situations.
37. Seemed drawn out at times (with examples). Sometimes I didn't know what he was getting at, but once it was all pulled together I was OK.

**Comments**

## HOMEWORK COMMENTS

1. I don't fully understand all of the concepts on the computer printout.
2. Sometimes I didn't know if I had the correct understanding or not.
3. When writing lab reports, it was hard for me to understand how to use the means, F-ratio's and P-values. I also had a hard time determining main effects.
4. The homework and computer usage were a very helpful part of the course.
5. Computers must be used in this course; I don't see how we could learn anything without them.
6. Using a computer is always important.
7. At first I was confused, but my comprehension improved by the end.
8. By the third homework assignment, I finally figured it out.
9. Most of the homeworks were difficult to interpret and finish, but they did help me to understand the corresponding labs better.
10. The computer became difficult because of time pressure. Otherwise I enjoyed the computers and learned much.
11. The computer lab should be open longer and have more convenient hours. Also there should be more than one person there to help students and they should be TA's not just another student who isn't knowledgeable about what the assignments are.
12. TA's should know more about the computer.
13. There should be more computers offered, especially the Silver Platter and both should be made available all day and all night at a minimum of 5 days a week.
14. If you are going to use the computers, there has to be more hours.
15. If you can't make the computers assessable, don't use them at all, or have different lab sections use them at different times.
16. When doing homework on the computer, it seemed like it was busy work. No one ever really explained how to interpret readings, you could just copy the example.

## LIBRARY

**Question: Do you consider the library part of the course worthwhile?**

1. Yes (n=76)
2. Yes, because I am planning to go on to grad school and I know this will help me.
3. Yes, because I am more confident now.
4. Invaluable.
5. Yes, but I don't like using the computer.
6. Yes, too many people are afraid of and ignorant about the library. That time was well spent.
7. Yes, because it introduced me to Silver Platter.
8. Yes, even though I wish I was more familiar with the library, I feel I did learn a lot in the class.
9. Yes, but I think we should have gone to the lecture on the library sources with something to do.
10. Definitely helpful for the research process.
11. No (n=11)
12. No, I think the library learning sessions should be optional. I knew how to do all that being a junior, and I was bored.
13. No, Often I was too pressured for time to be excited about finding research. It turned out to be more of a pain than it was worth.
14. Students know how to use the library.
15. Neutral - Somewhat- Its OK. (n=8)

**Question: What was the most difficult part of library research?**

1. It was difficult to get references. I could find abstracts but could never find the articles themselves. The library is too disorganized. (n=4)
2. Looking for journals. (n=3)
3. Finding a lost journal.
4. Journals not being there; A 26 floor search is futility.
5. Going through the whole process and then not being able to locate the journals. (n=8)
6. When articles were ripped out of journals. (n=2)
7. Time.
8. It wasn't difficult, it was time consuming.
9. Having the time it took to use the library.
10. Psych Abstracts.
11. Understanding Psych Abstracts.
12. I never really learned to use the Psych Abstracts.
13. Looking up abstracts in the books and not using Psychlit.
14. Getting sources from the stacks or microfilm drawers.
15. Figuring our ERIC and abstracts, but mostly getting up enough courage

to go do it myself.
16. Nothing.
17. Nothing was really hard.
18. Getting started. (n=2)
19. Figuring it out at first. (n=2)
20. Because of economic setbacks there was a lack of information.
21. Learning how to use the resources.
22. Librarians not accessible and rude if you sought help.
23. Computer usage. (n=4)
24. Silver Platter. (n=3)
25. Silver Platter, but it was also most useful.
26. Finding material on computer.
27. Silver Platter is not even vaguely user friendly.
28. Having only one Silver Platter and a 30 minute time limit and the librarians being so busy.
29. Waiting for Silver Platter; Figuring out what terms to use.
30. Deciding what variables to use.
31. Finding the key phrases to call on Silver Platter (too specific= 0 references, too broad = a zillion). (n=5)
32. Getting access to Silver Platter and getting hold of the volumes needed. (most were not available)
33. Not feeling confident enough to use Silver Platter.
34. Locating pertinent material. (n=5)
35. Finding material related to the last lab.
36. Finding relevant articles was time consuming. (n=2)
37. Finding relevant articles for the topic. (n=14)

**Question: Looking back, what else would you have liked to learn about the library?**

1. How to use Microfilm/microfiche. (n=7)
2. Easier ways to cross reference things.
3. How to use inter-library loan, searching through other colleges, more physical examples of Psych Abstracts. Maybe we could do one each for homework assignments. (n=3)
2. ERIC
3. Different types of indexes aren't stressed enough.
4. Silver Platter, journals other then Psychology.
5. Where to look if you can't find periodicals up to date.
6. Books are never emphasized as a good resource, just abstracts.
7. Nothing (n=11)
8. Nothing I can't learn myself.
9. The quickest route to the door.
10. I learned enough about the library.
11. Where are the missing books?
12. Nothing, I know everything.

13. More than just what is required to know.
14. Relearn how to use the Silver Platter.
15. The computer system.
16. The Silver Platter was always occupied and I would of at least have liked to try it.
17. More practice.
18. Things could have been better explained in more detail. It was easy to just depend on the Silver Platter and not learn how to find references in other ways.
19. How to get better feedback.

## NATURALISTIC OBSERVATION

**Item 52: Comments on format**

1. We should of had an example paper to read.
2. The TA did not tell us exactly what we needed in terms of data until two days before it was due.
3. It was our first lab, and we were confused, but it was clearly laid out.
4. My lab TA did not hand out the outline; I had to get it from a friend.
5. I met with my TA to review my rough draft. She told me what to fix and I did, but I received a D on the paper anyway.

**Question: What did you learn from this project?**

1. I learned what Naturalistic Observation was.
2. What purpose Naturalistic Observations serve.
3. How to conduct a Naturalistic Observation. (n=14)
4. What is important to consider in conducting a Naturalistic Observation. (n=2)
5. I learned the factors that go into performing a Naturalistic Observation. It shaped my knowledge of how to use the Chi-Square.
6. The many confounds that impair a Naturalistic Observation's inter-observer reliability.
7. How to design, execute and write up a Naturalistic Observation.
8. I learned that Naturalistic Observation was not just watching what happens. One can provoke an occurrence.
9. You can't interfere with subjects.
10. The troubles of trying to complete a Naturalistic Observation without being seen.
11. Naturalistic research, the difficulty of coding data.
12. What Naturalistic means exactly.
13. How to observe in a natural way.
14. How to naturally observe.
15. How to make observations and record them. (n=2)
16. Accurate ways of collecting data.
17. How to collect and calculate data for Naturalistic Observation.
18. How to avoid confounds to keep the results reliable.
19. I learned how to translate raw data into Chi-Square. I also learned about how to use operational definitions for defining what is being studied. (n=2)
20. How to use Chi-square statistic in Naturalistic Observation.
21. How to apply Chi-Square in practical uses. (n=3)
22. The steps it takes to write a lab, the time involved, how to conduct a Naturalistic observation and analyze the results.
23. Data collection, basic write up, and format. (n=2)

24. How to write a lab in APA format. (n=13)
25. How to write my first paper and how to run an experiment.
26. Papers must be specific and simply written, words effectively used, what format and procedure to use.
27. How effective Naturalistic Observation really is.
28. I now understand how to do initial research for whether a future study should be performed or not.
29. The importance of Naturalistic Observation for true life research and the importance of inter-observer reliability.
30. I learned that some experiments without intervention offer a real life perspective.
31. I learned how to view situations as they occur naturally and interpret their meaning. I understand Naturalistic Observation.
32. Even a simple idea has a number of aspects, especially in definition of behaviors.
33. That my TA did not expect us to do well.
34. How much detail there is needed in labs.
35. Lab reports are entirely too complicated.
36. That it was graded harshly.
37. That the grading procedure was harder than I expected.
38. I learned a lot never having done any of these things before.
39. The whole process, a lot.
40. Naturalistic Observation is easy.

**Question: What still confuses you (or what confused you upon completion of this project)?**

1. Nothing. (n=24)
2. Content of papers. (n=2)
3. Abstracts- what is included. (n=3)
4. At the completion of the project, I was unclear about the introduction and discussion.
5. Chi-Square analysis.
6. The results.
7. The results section, how to interpret the results.
8. The results and discussion.
9. Technical writing.
10. APA style.
11. APA manual.
12. How to be clear upon writing my lab.
13. When I finished the project I was still confused about format.
14. The general format of papers.
15. How to write it up.
16. At the end I was unsure of exactly how to write up the lab. I didn't

meet with my TA because I had 3 exams that week and no time. (I learned my lesson.)
17. Writing the lab was difficult, especially the intro and abstract.
18. The way you write up research using many student experimenters. The grading quirks of the TA's. (Non standard APA such as tables and figures, reporting of nonsignificant findings etc..)
19. Results are hard to word in any kind of paper.
20. I don't understand what I left out to get such a bad grade.
21. My grade. I fixed what my TA told me to but still received a poor grade.
22. I don't know why I got the points of that I did.

**Question: How could the Naturalistic Observation Lab be improved?**

1. Clarify paper write-up.
2. More emphasis, or practice with the write up.
3. More specific instructions about the lab report.
4. More specific feedback on rough drafts.
5. We received no instruction on how to write the lab. I had to seek other sources for help.
6. The opportunity to rewrite the first lab. (n=2)
7. A paper example, maybe read out loud or a photocopy to have as a construct for our minds when thinking about lab. The example could even come before the lab like in the memory lab.
8. References should be required to give students an idea of what is expected in this paper by reviewing other papers.
9. Somehow made to be less confusing, more defined, a possible example of a good paper to look at.
10. TA's could be more specific.
11. Make sure TA's hand out the guidelines in a timely manner.
12. Have TA go over the project in lab.
13. At the beginning, state clearly that 5 pieces of data are needed in each cell of the Chi-Square.
14. Make the format clearer. Don't count the Naturalistic Observation grade or count it less since most people fail it.
15. It's fine. (n=4)
16. Its fine. Clear yet provided insights.
17. I believe this lab was fair and doesn't need much improvement.
18. I don't know. (n=3)
19. It cant be improved. (n=3)
20. I think it could be eliminated.
21. It was too rushed, more time should be spent on it.
22. Not to grade so harshly, it discourages us at the beginning after putting a lot of hard work in.
23. More lecture emphasis.
24. Make it more interesting than counting Cokes and Diet Cokes.

25. Better topics.

**Additional Comments:**

1. Nice easy lab to start off with to gain confidence.
2. I think it was a great lab to start off with. It gave us the format and let us know what we were in for without being too complex.
3. I had no complaints with this lab.
4. Devote at least one lab section time to how to write a paper. Give examples of old papers.
5. TA's should go over the lab report and teach us what was wrong with the project.
6. We should have at least seen what a lab report looks like. I was fortunate in that I knew to do this myself.
7. I believe my TA was very knowledgeable in the area of statistics but was unclear on APA style writing.
8. My TA was not very helpful in this project or any other. I feel that if I had a better TA, I would have left this course with a better feeling of the knowledge of this material.
9. I was really disappointed with my grade because my TA didn't make many remarks about my rough draft. When I wrote it up, I mainly had problems with improper use of statistical terminology.
10. I felt I put a lot more work into this lab than my grade shows. We didn't seem to be well prepared to write it.
11. The labs were graded totally unfairly.
12. When I went to the TA for criticism, he said I did an OK job on it but my grade did not reflect that.
13. The observation my section chose was so stupid that I found it difficult to write an introduction and discussion for it.
14. I've already done a project like this so it really was not difficult.

**Item 74: Comments on format:**

1. Clear.
2. Confusion on how to analyze data in the results.
3. This was the hardest report, more time should have been taken to explain it and write it. Putting it next to the midterm didn't help either.
4. Sometimes the format sheet and the APA didn't agree, which was confusing.
5. This was the most difficult lab, I would have liked more of a guideline.
6. Without the handouts I would have been completely lost.

**Question: What did you learn from this project?**

1. How to conduct a survey. (n=8)
2. Survey research method.
3. Basic understanding of survey procedures.
4. How to write a survey with validity and reliability.
5. Lots about surveys, How to write and interpret them. (n=2)
6. How much information you can actually get form a survey.
7. About everything that goes into designing a survey. It is not as simple as it may seem. (n=2)
8. Surveys are complicated and time consuming. (n=2)
9. That it was difficult, but it was interesting, and I learned a lot about how to do a survey and the complexities of it.
10. How to conduct a survey and all the work involved. (n=3)
11. I learned about good and bad questions. I learned that surveys are very complicated.
12. What a pain in the neck survey research is. (n=5)
13. Surveys are more trouble than they're worth.
14. To construct a survey and have a general idea about what questions to ask. To do research and synthesize past work done with my own work.
15. Questions are difficult to word.
16. How to make up survey questions, possible biases, and analyze data.
17. How to write a survey and structure questions.
18. Wording questions negatively and positively. (n=2)
19. The construction of questions required a great deal of thought and
20. The more thought and time put in the better the item was at assessing behavior.
21. The importance of clear questions in determining attitudes.
22. How to pose survey questions, how to interpret results and put them into words.

23. How to conduct a survey and analyze the results. (n=6)
24. How surveys are constructed and distributed. I learned how to run ANOVA's, D-stats, Cross Tabs and what they meant.
25. I learned a little about coding data, question clarity, and the precision needed when administering surveys.
26. How to use and apply abstracts, demographics, what a criterion question is.
27. How to run an analysis for a survey. (n=3)
28. Random sampling.
29. Reverse scale.
30. Reverse scaling, correlation levels, reliability and validity.
31. Approaching subjects.
32. I learned that unless you apply certain rules in making a survey, interpreting the results might be impossible.
33. How to form hypotheses for survey work. Also analyzing data and the use of the computer was learned.
34. To use the computer for statistical operations.
35. How to run an ANOVA.
36. That you usually need a large sample to get significant results.
37. How to use the library. (n=2)
38. How to be critical of figures and ways tests are conducted.
39. A lot about finding references.
40. Silver Platter.
41. Use of references.
42. How difficult finding references is.
43. The format of writing up an experimental analysis.
44. How to do research, and good paper write-ups.
45. How to interpret peoples attitudes on a certain topic.
46. How to assess attitudes. (n=2)
47. That TA's all grade differently.
48. Frustration.
49. Nothing, it was horrible.
50. Lab reports are too complicated.

**Question: What still confuses you (or what confused you upon completion of this project)?**

1. Nothing. (n=6)
2. The purpose of the project.
3. Content of paper.
4. Validity and reliability and how to word questions.
5. How to effectively word questions. (n=2)
6. Exactly how to word survey questions
7. Criterion question, what purpose does it serve?
8. Reversing scales and eliminating bad questions.

9. How we got "reliable" items.
10. How the data was recorded off the Opscan sheets- What did the TA's do?
11. How to enter data from a survey onto a computer.
12. I still could not code data on my own. Running the analyses on all the data confuses me.
13. Results, especially the manipulation of the survey data.
14. Results interpretation. (n=6)
15. Reversing a scale is vague. (n=3)
16. The scales unbalancing the results.
17. "Scale" and criterion question.
18. The statistics used to analyze the data.
19. Computing the statistics.
20. Statistical interpretation. (n=2)
21. How to compare variables and obtain results.
22. Correlation and significant F-ratios.
23. We were never instructed how to read printouts.
24. How to read computer results and what were important stats to run on my survey to get good workable data.
25. The interpretation of data from ANOVA, how the means fit with the rest of the results.
26. Comparing questions to questions rather than demographic to scale or demographic to question. Also, running the program to establish reliability.
27. Write-up
28. Clarity.
29. I'm not always sure of everything I have to put into labs.
30. The introduction and what was wanted from us was unclear.
31. How to use the references in the lab. (n=2)
32. Method and result section.
33. Results section. (n=5)
34. The correct way to write up a results section.
35. How to report on the validity and reliability in the results section.
36. I wasn't sure how to discuss the results. I knew what they were but not quite what they meant.
37. What discussion is supposed to say.

**Question**: **How could the Survey Lab be improved?**

1. More time. (n=2)
2. More time on how to develop a criterion question.
3. More time to explain scale reversal.
4. More time to analyze the data.
5. More time explaining the results. (n=2)
6. More time to complete the lab. (n=3)
7. Better instruction and more time.

8. Take more time and TA's explanation.
9. Be more clear.
10. More discussion. (n=2)
11. Clearer explanations or more detail.
12. A lab outline should have been handed out.
13. Go over how the questions are formed.
14. Maybe more of a metacognitive perspective in lab of how to determine questions for the survey that pertain to the hypothesis.
15. More background to understand a reverse scale.
16. More student involvement when creating the survey.
17. Explain what the TA did.
18. Have us see how each bit of information is handled.
19. More computer work on surveys. Initially, all calculations were done for us. We were lost when attempting to run the computer program without having had the necessary experience.
20. Understanding the format of the results better.
21. Interpret results as a class in lab.
22. Teach more about what the statistics are going to do. An example of what happens when you have too much information vs. not enough.
23. Hypothesis will be led according to what research you collect.
24. More help using the computer and interpreting the results.
25. More help interpreting the computer analysis.
26. Somehow give more guidance, explain the results more.
27. More specific feedback is needed in lab.
28. Clearly explain what is expected of the students.
29. Explanation about the write-up
30. Provide a clearer guideline sheet for the survey that applies to all lab sections.
31. Better, clearer survey checklists.
32. More lecture emphasis.
33. It would have been helpful to give the homework about the survey lab before the lab was due, so students would be better prepared to formulate and interpret the results.
34. Better survey material.
35. Easy topics.
36. Narrow down the options. (n=2)
37. Make sure topic isn't too narrow.
38. It can't
39. My TA was great, its the overall course that bombs.
40. Not sure, meeting with my TA helped me most.
41. Eliminate it, at least the computer part.

**Additional Comments:**

1. Great but difficult lab.

2. It was very hard.
3. It was the most interesting and fun lab report.
4. This lab was very interesting.
5. With everyone in methods trying to use the library resources it was very difficult to get references. Is it possible to stagger the lab sections?
6. I was completely confused about how to determine validity.
7. I had a hard time getting an hypothesis. For some reason this was a big jump in terms of computer comprehension for me. Interesting topic.
8. Not enough class interpretation of results, I had to go to my TA for interpretation, I had a lot of specific questions.
9. I know now what I did wrong in the paper but at the time I had a hard time grasping what was expected.
10. This was the project that I could replicate least. A lot was done by the TA and I didn't feel totally in control.
11. The references were difficult to find and the TA too critical.
12. The TA's grasp seems to come from meetings with other TAs'.
13. My TA made some specific comments but not as many as should have been made to cover the amount of points taken off. When I asked her what was wrong with the format, she said nothing- it was good. She took points off anyway, she said she would have to sit down and explain it to me.
14. Very upset with the grade on this lab report. No comments were made. I followed the instructions explicitly from the handout sheet and looked at mistakes from the previous lab report. The grading of this lab was unfair.
15. I an very disturbed with the inconsistent requirements held among the different TA's in this course. I believe that there should be a continual reevaluation of the grading system utilized by each TA. I am so upset with this course, I started the semester with a positive attitude, I achieved a 3.7 last semester and I believe that because of this course and its unfair requirements and inconsistencies that my GPA will be markedly lowered. Also, I feel that my TA was irrational in his expectations, unclear in his objectives and sardonic in his teaching attitude. He is not an adequate teacher for lab which was like a checklist, not a qualitative learning and teaching session. Initially, I worked very hard but after receiving no reward, not any sign of encouragement, I feel that I gradually became dejected. I realize that this is not the right way to go.

## GROUP DESIGN

**Comments on Format:**

1. Lousy and rushed.

**Question: What did you learn from this project?**

1. Knowledge of experimental design. (n=5)
2. How to run a group design. (n=4)
3. How to do a group design and how to set up an experiment with an experimental and control group. (n=3)
4. The difference between within subject and between subject designs. (n=5)
5. How variables interacted with each other.
6. How to run an experiment and a better understanding of computer analyses. I also did better to using the references.
7. Not much, but how to randomly assign people to groups and administer control and experimental groups.
8. Analysis of Mixed designs. (n=8)
9. How to graph interactions, what they meant.
10. How to analyze the results of other experiments in a journal format.
11. How to run a computerized experiment and the advantages of using a computer in scientific research.
12. How to interpret the research findings and how to read critically.
13. How to replicate previous research and how to integrate their methods and results into my lab report.
14. I learned to compare my work to prior studies.
15. How to replicate a previous study.
16. The format of writing up an experimental analysis.
17. How to make something out of confusing results.
18. To search for explanations for contradictory (to hypothesis) data/results.
19. A lot about memory theory.
20. Process of a lexical decision task.
21. I learned information on memory retention.
22. Having a clear abstract is important.
23. I learned that I need a new TA.
24. How much I hate this class.
25. Lab reports are complicated.

**Question: What still confuses you (or what confused you upon completion of this project)?**

1. Nothing. (n=5)
2. The point.

3. The background article was confusing and somewhat uninteresting.
4. I was very confused by the specific experiment we replicated.
5. Interpretation of reference article.
6. Not sure how to interpret confusing results of earlier studies (M and S)
7. Some of the results used in the reference report were unclear to me.
8. How to build hypotheses.
9. How results were calculated, again, what do the TAs' do?
10. How to interpret the statistics. (n=5)
11. The ANOVA
12. The analysis of interactions vs. the main effects.
13. Error, interaction of variables.
14. Results are still confusing to me. I find it difficult to interpret the results in the paper, no matter how many times I go over it with my TA.
15. APA style.
16. The concept of clarity in write-up.
17. I hate abstracts, I have a hard time determining what should or should not be included.
18. How to incorporate the background information on memory (given in lab) into the report.
19. The method section write-up.
20. Results and discussion sections.
21 Format of the discussion of the paper.
22. How to clearly discuss the statistical outcomes.
23. I didn't like that we got rushed onto the computer and then had to get off them quickly. I didn't know exactly what the Lexdec was doing.
24. My grade.
25. Once again, I changed my paper exactly how the TA told me to and yet
26. I only received a B on the paper.

**Question: How could the Group Design Lab be improved?**

1. I feel it is adequate as it is. (n=4)
2. Cut out the computer part, have it already done.
3. Be more clear. (n=3)
4. Concepts in the background paper need to be better explained.
5. More thorough explanation. (n-2)
6. More explanation on result interpretation. (n=2)
7. The handout could of gone into a little more detail about how to discuss or not discuss the interaction.
8. A longer, more complete discussion about how the lab should be written up.
9. Better explanation on what is expected on the paper and complete

review of rough drafts.

10. More clear, maybe use an experiment we design instead of modifying an existing experiment.
11. Replicate a more simplistic experiment.
12. Use a different experiment to replicate. (n=2)
13. Make the task more interesting.
14. By using a clear and fun research paper to work form.
15. Make it more interesting and relevant.
16. Give it a simpler basis or more time. We spent forever on the survey and then this was due shortly after.
17. More explanation on why we would want to repeat this study.
18. More time. (n=4)
19. More lecture emphasis.
20. Give homework 4 before lab 3 is due.
21. Homework 4(interactions) should be distributed before this project to aid in the student preparation of the required graphs for the paper.

**Additional Comments:**

1. Least interesting lab to me.
2. It was interesting to interpret mixed ANOVA's.
3. It was really boring.
4. I found it difficult to write a lab report that contained
5. Essentially the same information as the experiment we reproduced.
6. We didn't have anything to do with it, the TA did it all. It was
7. Hard to write up the lab report because I didn't even know what we did.
8. The grading seemed harsh on this lab report. There didn't seem to be enough time; it felt rushed.
9. It wasn't as easy as expected, needed more time. Less than one week between computer work and due date.
10. It was very rushed and we were told it was a piece of cake. It turned out to be everyone's downfall. I fell over 5 points on this one. I felt ill prepared.
11. I would like more specific comments on the lab because I don't know why points were taken off.
12. The lab sections shouldn't be worth such a large part of our grade.
13. Since there are so many sections there is a lot of variability among
15. TA's when it comes to grading. This isn't fair.
16. My TA was not helpful. I felt that if I had a better TA I would have done better in the course.

## GENERAL LAB INFO

**Question: Were any particular handouts more helpful or less helpful than others?**

1. No. (n=6)
2. No, they all did their part in explaining what had to be done.
3. All about the same, used them together.
4. All handouts were very helpful. (n=5)
5. All except group design, pick another topic.
6. Homework handouts were helpful (excellent). (n=15)
7. Homeworks were helpful especially with labs. (n=2)
8. First homework was extremely helpful.
9. Homework three was very helpful.
10. Computer handouts were helpful. (n=4)
11. Computer handouts were very helpful and also how to analyze the data was helpful.
12. NCSS for different ANOVA's. (n=3)
13. Computer handouts confusing.
14. Computer handouts not helpful.
15. NCSS handout was invaluable. (n=3)
16. The first computer handout very helpful.
17. Checklists were most helpful. (n=10)
18. Lab handouts. (n=2)
19. Paper handouts-excellent.
20. Lab handouts were helpful.
21. The last two handouts were confusing.
22. M+S handout on group design very helpful.
23. Going over write-ups with TA's made handouts more helpful.

**Question: What other kinds of handouts would help?**

1. The ones we presently have are great.
2. We only got one checklist but it was helpful.
3. Purpose of experiments and why we did them.
4. More examples with results clearly defined.
5. Good sample lab reports. (n=8)
6. Better survey handout explaining how to interpret the results.
7. Explanations of what is expected in clarity and content.
8. Write-up checklists.
9. Handouts on how to write reports.
10. Clearer computer handouts.
11. More computer handouts.
12. Computer handouts that were step by step.
13. More handouts and additional homework examples.
14. More homework to be discussed during lab.

15. Lecture summaries. (N=2)
16. Outlines of chapters in the text.
17. Relating lab with lecture.
18. Doing research in the library. (n=2)
19. What we will be accountable for on the exams.

**Question: What would you think of one 3hr. lab period per week?**

1. Not a good idea. (n=66)
2. Not often enough to address the needs and questions of students.
3. No, unless you had a magnificent entertaining TA to teach lab.
4. No, every effort should be made to keep it as it is now.
5. No, you get much more accomplished in two periods and it stays interesting.
6. No, I like the break up with lecture between labs.
7. No, two periods allow more opportunity for questions and thought about the material. (n=11)
8. No, students need more lab sections per week if anything. (n=2)
9. No, If you missed one lab period, you would be lost. (n=2)
10. No, won't be as efficient.
11. No, too much at once. (n=3)
12. Better to see your TA more for questions during lab than to try to hunt her down at her office.
13. No thanks, its much better to have time between labs to look at the material and understand it. It was a short enough time that you could keep in touch with things in class and questions were still fresh in your mind when labs occur more than once a week. And three hours is just too long. I don't think you get much form that.
14. Yes, nice, good idea to get it over with in one shot. (n=5)
15. Yes, better.
16. Yes, only if I had a better TA.
17. I think that it would benefit the students because it is a more concentrated period of time with no breaks.
18. It would be a good idea as long as the TA's were more carefully screened. It is important that they help students.
19. Good idea of material could be clearly presented without being overwhelming.
20. Depends on the number of students in the section. If there was a large number then no, but with small numbers it could fly.
21. It would be pure hell but as long as it wasn't too early in the morning it would be bearable.
22. Time in lab is not as important ad the material due to be discussed.
23. TA should be better prepared rather than extending the hours.
24. I think three 1 hour lab sections minus lecture would be perfect.

**Question: Do you think we could shorten the lab time to 2hrs per week and still cover the same material?**

1. Yes. (n=58)
2. Yes, we almost always had time left over.
3. Yes, but TA's need to be more assessable because the students will have more questions.
4. Yes, some lab periods were only 20 minutes and others were canceled altogether.
5. Yes, as long as the TA is good. Also, attendance should count.
6. Yes, but get more computer hours available, that was my worst problem.
7. No. (n=29)
8. No, the instructor can always dismiss class early, but full time should be allotted.
9. No, we didn't have enough time as it was. (n=5)
10. No, labs should use all the time they can get.
11. No, things would be too hectic to try to compact them even more.
12. No, some days we really didn't need the whole time but many days we did. I think the group members need time to coordinate and time to become comfortable enough with each other to work together. The 1'15" lab period was good for questions, for creating surveys and the group project and for explaining what would be expected in the lab reports.
13. No, students need as much help with these difficult and extremely difficult lab projects as they can get.
14. It depends on how well the TA is understood by the students.

**Question: If you had to cut out one part of the course, what would you cut?**

1. Lecture. (n=42)
2. Lecture. Labs give more hands on experience, lectures are confusing and useless for completion of labs.
3. Lecture seems useless compared to lab.
4. Lecture is not an integral part of the course. The course focuses on writing the labs, and you learn that in lab. Something different should be in lecture.
5. Shorten lecture.
6. Cut lecture to 1 hour a week. (n=3)
7. Cut lecture not pertaining to experiments and labs we are doing. (n=2)
8. Lecture, because I learned more valuable information in lab.
9. I would (and did) cut lectures. I found them boring and couldn't stand to sit there the whole time. Not much incentive to attend lecture when it makes up only 25% of the grade.
10. Lecture, combine book material in lab sections.

11. Lecture. I had a difficult time following lecture, I learned more in labs. Perhaps TA's could teach the concepts along with what they would normally teach in smaller classes and then maybe meet twice a month with the professor for an overview. I really didn't learn anything in lecture.
12. The lecture because it counts for so little of our grade. Also, lab and lecture need to go together more. TA's never seem to know what's going on in lecture or what's on exams.
13. Lecture did not integrate well with labs.
14. Try to relate lab and lecture more.
15. I don't know about cutting anything but the lecture part left something to be desired. The lab and lecture seem very separate. Each part was good in it self but I was so concerned with writing the papers that I tended to neglect lecture. If the two were better connected it would be easier to become involved in both parts.
16. Lectures would be more interesting if they focused on research examples (a couple of good ones) and by applying them to research designs instead of just focusing on principles and theories of research design.
17. Lectures are unclear and tests are near impossible. Too much work is involved in this course, much of which is not necessary.
18. Exams, give 4 quizzes instead. This would help people learn better because they would follow along with lecture better. (n=3)
19. Exams, they're not important.
20. Midterm.
21. Make the final optional.
22. I would cut the grading scale.
23. Testing on material that hasn't been applied in lab or lecture.
24. Need more homework and lecture tests, the lab is OK as is. Points need to be spread around more, Homework and tests illustrate some level of understanding as well as labs.
25. Also, add some homework pertaining to study questions of lecture and reading.
30. Homework was not necessary, we learned that stuff in lab and lecture. (n=2)
31. Computers, coding data it too time consuming and repetitive. Interpretation is important though.
32. Computer homework. Homework is necessary but if it can be done without the computer it would be easier to get it done on time.
33. Library usage. Even though I thought it was important, there was one week in which we had an exam and a lab due. I would have liked to use the extra time to study.
34. Workload.
35. Cut one structured lab and use extra time for independent project. (n=2)
36. Cut one lab report. Most courses have only three papers due per

semester. If there were only three labs, grades on them would improve.

37. One or two lab reports, not enough time to cover them successfully.
38. One lab report or make lecture two 50 minute periods a week. Lab.
39. Naturalistic Observation.
40. Survey lab.
41. Survey, if not cut made less complicated. Maybe options could be presented to the class rather than chosen by the class, it was very time consuming.
42. Survey lab, only because the TA's instructions were not clear, so we didn't know how to interpret the results correctly. But I liked the idea of learning to create survey and demographic questions.
43. Group design. (n=2)
44. Independent project, concentrate on understanding a strong base. (n=2)
45. It's OK that we have to do independent projects, but most people are doing similar things to the other lab reports and I don't feel I'm learning a lot from the final project.
46. Nothing. (n=6)
47. I wouldn't cut anything, just give it more credit.
48. Ideally the lecture section should be the same size as labs.
49. I don't think anything should be cut but I do think the labs should be properly managed. I was very upset with my lab section. It sucked. The TA didn't have a clue as to what was going on. She was never prepared for the computer sections and we usually just wasted time and ended up going back to the computer lab when a different TA was there. The lab TA should definitely be monitored. I know it wasn't my TA's choice to be there and I don't hold her responsible for the problems. I was told that she was one of the least experienced TA's out of the group and believe me it really showed. The whole lab suffered because of it. Please, in the future keep a close eye on the TA's, especially when they are known to be under-experienced. This was an incredibly important class for me and I'm really upset with the way it turned out. I feel I missed out on things!

# APPENDIX D

# FINAL STUDENT AND FACULTY SURVEY

# OPEN-ENDED RESPONSES

## OPEN-ENDED QUESTIONS

**FILL IN THE BLANKS**
**Responses, Initial and Final Student Surveys, Part VII**

**Question 1: When I think of taking this course, I feel:**

Initial, Positive Responses

Challenged (n=8)
Curious (n=2)
Interested (n=2)
Anticipation (n=2)
Confident (n=2)
Positive
Calm
Anxious to do well
Excited
Motivated

Final, Positive Responses

Challenged (n=6)
Good
Interested
Accomplishment
Competent
Positive
Relaxed
More assured
Excited
Satisfied (n=2)
What I learned can be applied for life.
Fine (n=5)

Initial, Neutral/Ambivalent Responses

Alright
Busy
Unsure(n=3)
Ambivalent
Nothing
OK
Unbiased

Final, Neutral/Ambivalent Responses

Alright
Busy
Relieved (n=3)
Glad it's over (n=3)
Neutral
OK
It was necessary
Better than I thought I would
Surprised it wasn't so bad
That it has been blackballed for silly reasons

Initial, Negative Responses

Nervous (n=22)
Anxious (n=8)
Scared (n=10)
Frightened
Agitated
Overwhelmed (n=4)
Worried (n=3)
Tense
Burdened
Uncomfortable

Final, Negative Responses

Nervous (n=5)
Anxious (n=14)
Scared (n=2)
Anxiety stricken
Anxiety
Overwhelmed (n=2)
Worried
Tense
Overburdened
Uncomfortable (n=2)

Bored (n=2)
Fear
Negative
Inexperienced
Tired
Confused
Apprehensive (n=5)
Intimidated (n=4)
Awful
Angry
Difficult
Restricted
Forced
Wary
Hatred

Bored

Negative
Unprepared
Tired
Confused
Bewildered
Uneasy
Sick
Mad
Frustrated (n=2)
Pressure
Overloaded
Stressed (n=4)
Disgust
Upset
Nuts
Unhappy
Lost
Disappointed
Dissatisfied
Icky
Gross
Dismayed

**Question 2: When I think about using a computer, I feel:**

Initial, Positive Responses

Confident (n=11)
Fine (n=8)
Comfortable (n=4)
Good (n=3)
Interested (n=4)
Challenged (3)
Relaxed (n=2)
At ease
Easy
Excited (n=2)
Self-assured
Secure
Curious (n=3)
New
Fantastic
Intrigued

Final, Positive Responses

Confident (n=7)
Fine (n=12)
Comfortable (n=6)
Good (n=5)
Interested
Challenged (n=2)
Relaxed
At ease
Calm (n==3)
Excited (n=2)
Competent (n=3)

| Initial, Neutral/Ambivalent Responses | Final, Neutral/Ambivalent Responses |
|---|---|
| OK (n=6) | OK (n=9) |
| Hesitant | Indifferent |
| Indifferent (n=2) | Ambivalent |
| Unsure (n=2) | Alright (n=2) |
| Adequate | More comfortable |
| Uncertain | Somewhat confident |

| Initial, Negative Responses | Final, Negative Responses |
|---|---|
| Nervous (n=12) | Nervous (n=8) |
| Anxious (n=6) | Anxious (n=4) |
| Confused | Confused (n=3) |
| Apprehensive (n=2) | Apprehensive |
| Intimidated | Intimidated (n=2) |
| Uneasy | Uneasy (n=2) |
| Bored | Bored (n=2) |
| Like avoiding it | Like doing something else |
| Unknowledgable | Unskilled |
| Incompetent | Unconfident |
| Insecure | Worried |
| Unqualified | Unsure |
| Overwhelmed | Stress |
| Aggravated | Hatred (n=2) |
| Clueless | Uncertain |
| Awful | Nauseous |
| Lost (n=2) | |
| Uncomfortable (n=2) | |
| Frustrated (n=2) | |
| Avoidance | |
| Scared | |
| Uninterested | |
| Terrified | |

**Question 3: When I think of doing statistics, I feel:**

| Initial, Positive Responses | Final, Positive Responses |
|---|---|
| Confident (n=14) | Confident (n=11) |
| Fine (n=4) | Fine (n=10) |
| Comfortable (n=2) | Comfortable (n=4) |

Good (n=2)
Relaxed
At ease (n=2)
Interested
Challenged (n=5)
Competent (n=2)
Excited
Secure
Content

Good (n=2)
Relaxed (n=3)
At ease
Interested
Challenged
Competent

Initial Neutral/Ambivalent Responses

OK (n=3)
Neutral
Unsure
Mediocre
Alright
Different

Indifferent

Final, Neutral/Ambivalent Responses

OK (n=6)
Neutral
Ambivalent
Somewhat shaky
It's a necessary evil
Like I should stop thinking about things like that

Initial, Negative Responses

Nervous (n=7)
Anxious (n=5)
Bored (n=5)
Sick (n=4)
Uneasy (n=3)
Confused
Frustrated (n=2)
Scared (n=2)
Unhappy
Insecure (n=3)
Worried
Horrified
Apprehensive
Uncomfortable
Incompetent
Annoyed
Awful
Trivialized
Hatred
Unprepared
Unconfident
Very negative
Reluctant
Forgetful

Final, Negative Responses

Nervous (n=3)
Anxious (n=9)
Bored (n=8)
Sick (n=3)
Very uneasy (n=2)
Confused (n=4)
Frustrated
Scared
Unhappy
Upset
Concerned
Terrified
Dread
Discomfort
Shaky
Bothered
Stress
Helpless
Mad
Limited
Weary
Anxiety

**Responses, Faculty**

**Question: When I think about teaching Methods, I feel:**

Positive Responses

Challenged (n=3)
Excited

Neutral Responses

Opinionated
You want to be a clinician.
Nothing
Not applicable
?

Negative Responses

Overwhelmed (n=3)
Tired
That it's an impossible task, given the current nature of the course.
Depressed
Intimidated by the amount of TA coordination involved.
Inadequate
Nausea
Unenthusiastic
Like someone just gave me a cold plate of lima beans to eat.
That I would not...

**OPINION FORUM**

**Question 1. In your opinion, should Methods in Psychology focus on students as consumers of research or focus on students as research practitioners (In other words, should we mainly focus on teaching you to understand and critique other researchers' work, or should we mainly focus on teaching you how to do your own research)?**

Initial Student Survey Responses

As consumers:

1. Critiquing will show by example what is expected.
2. Critiquing is a prerequisite for our own research.
3. Most students will consume more than perform in the future.
4. If students want to so research let them go to grad school.
5. I don't want to do my own but I enjoy reading others'.

As practitioners:

1. In doing hands-on, Critical reading will become easier.
2. Our own research will allow us to critique others.

Other:

1. There should be two sections, one for each.
2. There should be two courses: stats/hands-on research and critique.

Final Student Survey Responses

As consumers:

1. Not everyone plans to go into research, so critique will be sufficient. (n=5)
2. The class should focus on the students learning to critique others' work. This will help to develop his or her research abilities more than some list of rules and definitions.
3. We should be taught more to interpret existing data. The understanding of history gives us a good foundation on which to create experiments.

As practitioners:

1. Focusing on students as research practitioners creates more interest in the course, the other stuff can be accomplished along the way.

2. If you teach someone to do their own research they will be able to critique others better. (n=7)
3. By doing our own research we learn to critique ourselves.
4. The completion of four lab reports has helped me learn invaluable skills.

As both practitioners and consumers:

1. Both; I learned a lot from analyzing other researchers work and it helped me to formulate my own ideas.
2. Teach us to understand other researchers work and do one independent project.
3. Projects are more fun and exciting, but you need to critique others work to do this.
4. Teach how to critique others work before students for their own work.
5. Both are very important.
6. Both, some students will become consumers and others will become practitioners.

Other:

1. The focus on research practitioner taught me that although I was good at it, I hated it and would never want a career in it.
2. Methods should be a year long course.
3. Stats teaches critique.
4. Two separate courses, critique should be mandatory and research projects should be optional. (n=3)

Faculty Survey Responses

As Consumers:

1. Critique others, this is always a good step towards doing your own anyway.
2. Consumers. Too few go on to research careers.

As Practitioners:

1. Students should always be taught to be research practitioners because they will then also be intelligent consumers. But it doesn't work in reverse.
2. I don't think the two are independent of each other and the best way to be a good consumer of research is by teaching someone how to do it well.
3. How to do your own research, which in turn should enable you to critique other researcher's work.

4. The goal: understand others' research. The effective technique: learn how to do it yourself.

As Both Practitioners and Consumers:

1. False dichotomy, both are critical and mutually supportive.

2. Both, but most students will be consumers, so that should have priority.

3. Can't be separated-- hands on experience with design, execution and interpretation necessary to developing the expertise to be a sophisticated consumer of research. Otherwise it's just book learning.
4. We should have an option for serious psych students to have labs, but not make everyone take labs.

**Question 2. Would students benefit from more conceptual work or more hands-on work?**

Initial Student Survey Responses

Conceptual:

1. Conceptual base is needed for understanding of hands-on.
2. Hands-on can be saved for graduate school
3. Hands-on is often distracting and the points we are supposed to learn are lost

Hands-on:

1. Hands on, because one gets more involved.
2. Hands-on helps with retention.
3. Concepts are easily forgotten, but when you do it yourself you tend to remember.

Final Student Survey Responses

Conceptual:

1. Conceptual is best for undergrads, hands-on will come in graduate school.
2. I think there is enough hands-on now.
3. More conceptual work reinforced by more homework.

Hands-on:

1. No substitute for experience.
2. Personal experience is key.
3. All our other courses are completely conceptual.

Other:

1. It depends on what area the student plans to enter.

Faculty Survey Responses:

Conceptual:

1. Conceptual, the hands-on model has failed due to dwindling resources and overgrowth of the department.

Hands-on:

1. Hands-on, definitely. We already have 300 million other courses that attempt to deal with things more conceptually and prevent any kind of hands-on work because of their size.
2. Hands-on. This is likely the only course in which there is an opportunity to gain this experience.
3. Hands-on. Conceptual work is offered in every other course in the department. Methods is unique in offering a hands-on experience to all majors.
4. Hands-on component must continue.
5. More hands-on work
6. More hands-on of some kind, but cost must be a major consideration.

**Question 3. How do you feel about the idea of integrating statistics and methods into a year long course?**

Initial Student Survey Responses

Positive Responses:

1. Positive, if not rushed students would understand and retain more.
2. Ok if more hands-on.
3. Good idea, the department puts too much emphasis on these two courses and they should be integrated.
4. Good, this will reduce the lag time between courses and it would make stats more interesting and useful. (n=5)

5. Together Stats and Methods might make sense to students.
6. Methods will help with the understanding of Stats. (n=5)
7. Good, then Stats will not be forgotten.
8. Good for students who presently can't get methods right after Stats.
9. Can't hurt to try, it's just like chemistry.
10. Might be easier than the transition from Stats to Methods.
11. Would make Stats seem more like a psychology course than a math course.
12. Good, it was frustrating in Stats to do the math but not apply it. (n=6)
13. I'm a transfer student and I took such a course and it worked well.

Negative Responses:

1. Stats needs to be concentrated on alone and first. (n=3)
2. Too difficult to do both.
3. Too scary, too overwhelming. (n=3)
4. They should stay separate. (n=3)
5. Stats first is easier; both together would be too much. (n=7)
6. Knowing you had to take this stuff for a year would give anyone ulcers.
7. Too confusing to schedule.
8. Too extreme.
9. It may be intimidating.
10. It excludes students for half a semester.
11. It would make Stats more meaningful, but it's easier to apply stats to methods when you already know Stats.
12. Stats is my personal nightmare and it would be hell to endure a year long course.

Other Responses:

1. Realize the potential or limit of an average psychology major.
2. What a weed out!
3. Leave it up to the department.
4. Students should be able to learn at their own pace.
5. It should be at least required that Methods follows Stats the next semester; there shouldn't be a gap.
6. How many credits?

Final Student Survey Responses

Positive Responses:

1. It would be beneficial to be able to directly apply Stats to something relevant. (n=6)
2. It might help more.
3. Excellent idea, I wish I had the option available to me.
4. This is a good idea as long as Stats is made relevant. I don't feel I used my Stats core once in this class.
5. Very positive, not as overwhelming and no gap between Stats and Methods.
6. Continuity would help, as it is I think Methods is a very strong course and it would be even better if it were a year long course.
7. Positive, because the time needed to adequately cover subjects in the course was much more than a semester allowed.
8. I feel this would enable students to understand statistics easier by applying them in more lab reports.
9. Yes, because I think I'd remember more of the statistics if I'd been applying them from the beginning, but you still need a basis in statistics.
10. Positive if the workload stays the same, not any harder.
11. Great idea. (n=2)
12. I think by integrating them you know and understand why you have to take these courses. I had a hard time with stats and I didn't understand why I needed it until now.
13. It would be a great ides to learn the principals and when they are still fresh to apply them. (n=2)
14. In this way all the aspects of Methods could be coordinated much better.
15. I feel Stats was useless because we didn't learn when things were used.
16. If the courses were combined, it might help the students having problems with statistical material by using it.
17. Positive, this makes more sense. By the time Methods rolls around what little I learned in Stats is lost.
18. Positive but unsure. It would have to be run in a well organized, integrated fashion.
19. It may help integrate the two concepts better.
20. Both are integral to Psychology and would enhance each other.

Negative comments:

1. Too confusing and intimidating. (n=4)
2. Too overwhelming. (n=2)
3. Bad idea.
4. The courses should remain separate, first we need to learn stats and them we can apply them.
5. Combining the courses would be extremely demanding. (n=3)
6. I think it was important to learn Stats first, but Methods should be a two semester course.
7. I thought it was a terrible idea in February, but now I think it's probably unnecessary.
8. It should remain two courses.
9. Many students take semesters off or have other reason for separating the courses.
10. Students would get bored, it would be too long.
11. Scheduling would be a hassle.
12. I think it would be much more difficult for students.

Other and Ambivalent comments:

1. As a four credit course to would be very tough. It can be six credits and emphasize lecture more.
2. Only if most of the reports were cut out of the course. It would be too much otherwise.
3. I think the dread for the course would be unbearable.
4. However it might make sense to do it that was. In my Stats course the Professor gave a little insight into the application to research, which helped.
5. I really did not use anything I learned in Statistics in Methods. I did not even learn Chi-Square in Stats. To me Stats was not useful at all and should not have been a prerequisite for Methods.
6. As long as it won't be a problem for future students to enter class.
7. At first I didn't like the idea, but now I don't see any difference.
8. I don't see the difference, but at least you're guaranteed to get Methods right after Stats.
9. The only way would be to teach us stats through the computer system.
10. More time would give more experience doing papers.
11. I'm unsure. I'd have to see a course outline because I can't imagine it myself. Actually, Stats was difficult and I don't think many come out of that class with confidence; I didn't.

12. There is too much to learn at too fast a pace in Stats. Methods only utilizes four of the statistics, one that was used in Stats. If there is a plan I'd like to learn what it is.
13. I didn't use much of what I learned from Stats in Methods, but what I did use made me feel good to apply what I'd learned in Stats.
14. Overlap Stats and Methods like so:
    Stats.....
    .....Methods.
15. I felt that a lot of stuff covered in Stats didn't prepare me for Methods. Too much time was spent on basic concepts and we didn't even get to Chi-Square.

Faculty Survey Responses

Positive Responses

1. We should definitely do this. Stats is too conceptual and Methods is too distance in the curriculum from Stats.
2. Many universities take this approach.

Ambivalent Responses

1. Great idea, but would take enormous effort to develop, ant there are clearly few rewards, if any, for teaching Methods, yet alone taking on a task of this magnitude.
2. Positive, but causes problems in finding suitably knowledgeable faculty and TA's unless team taught.
3. It's a good idea in principle, but if it were truly integrated then only stat teachers could teach Methods. Also, students transferring out of UMASS after the first semester wouldn't have completed either course. It would also create scheduling problems for faculty by making their teaching schedules less flexible. It would require a full-years commitment to a single course.
4. If it were possible to increase the hands-on lab experience, great; if it means relatively more lectures and abstract analysis, no!
5. I don't know enough to make an informed judgment.

**Question 4: How do you feel about the idea of integrating statistics and methods into a year long course AND offering a 400 level laboratory course on general research design for motivated students?**

Initial Student Survey Responses

Positive Responses:

1. 400 level elective lab would be great.
2. Sounds suicidal to me, but someone might take it. (n=4)
3. Excellent compliment to Methods.
4. Good, to separate people interested in research from those who only want basics.
5. Good, but the year long should also include some lab work.
6. Good, one semester may not be enough for highly motivated, interested students.
7. The 400 level course is a great idea, it would prepare students for grad school and more in depth design. (n=6)
8. Practice makes perfect, a good way to drill it into our minds.

Negative Comments:

1. All Psychology students need lab experience, it should be mandatory. (n=4)
2. Too much to ask, students who don't take the lab will be missing out.
3. It should be required because everyone benefits from hands-on work.
4. I'd prefer not to have to take three semesters to get exposed to general research design.
5. Much too difficult.
6. Motivated students could get RA's.
7. Not necessary.

Ambivalent and Other Comments:

1. The 400 level lab sounds good, integrating Stats and Methods sounds risky. (n=8)
2. Stats and Methods together would be frightful.
3. Optional for those who wish. (n=8)
4. I would not take it.
5. Stats and Methods together would be fine without the 400 level lab.
6. Either option but not both.
7. Either way is positive.

Final Student Survey Comments

Positive Responses:

1. The more experience the better, plus an extra lab will add credibility on grad school applications. (n=2)
2. Good idea, a high level lab would allow you to concentrate on application rather than juggling homeworks, exams and labs.
3. Definitely
4. This is a good idea.
5. If people plan on doing research as a career then the option is good.
6. Good idea for motivated students. (n=2)
7. Methods was extremely valuable and more should be offered if students are interested.
8. Not a bad idea.
9. Positive, as long as it is optional. (n=3)
10. Very positive, this would allow students with career
11. interests in experimental Psychology to do so, while sparing those who have counselling Psychology as a career goal all the wasted time and effort.

Negative Responses:

1. Too confusing and intimidating.
2. Things are fine as they are.
3. I don't think as many people as should would take it.
4. Way too overwhelming.
5. I think students in a 400 level lab would disadvantage those who don't take the lab. The 400 level lab should be optional after Methods and Stats are done.
6. Sounds like a bit much. The course as it is is demanding.

Qualified, Ambivalent and Other Comments:

1. I think this may be over the heads of some. If a student wants to do a lab outside of class, then do it.
2. Keep Stats and Methods separate and still offer 400 level course.
3. I would not be one of the motivated students.
4. I feel that I learned the most during labs and it should be mandatory.
5. If the year long course focused on conceptual information with no labs, it would be good.
6. Positive, as long as there is still hands-on work in the integrated class.

7. When Stats and Methods are integrated, don't do the hands-on stuff, just do readings of research and statistics. Then do hands-on in the 400 level lab.
8. That depends on the lab portion of the course, do we need it or not?
9. I did not learn much from lecture. Stats wasn't very pleasant and neither was Methods lecture. The lab was crucial.
10. The Stats and Methods courses here are worthless. They will not help me in grad school. I do not feel more knowledgeable or capable in these areas.
11. Positive, as long as it is optional. (n=3)
12. I would probably take the 400 level lab.
13. Should possibly combine it with Junior Writing.
14. Too much research, offer more electives.

Faculty Survey Responses

Positive Responses:

1. The advanced course should be developed in any case.

Ambivalent:

1. Not clear what an integrated course would look like, also probably need 400 level Stat course for motivated students.

Negative:

1. Not enough resources now and every student needs lab experience.
2. It should happen early, before core courses.
3. We have a general course. We already have the specialized lab courses for this purpose and they seem to work pretty well.
4. Honors thesis and independent research instead of 400 level course. Advanced course on interview methods would be great, but would soon be rapidly over-enrolled.
5. Motivated students don't need a 400 course, they should enroll in lab courses and in independent study or senior honors. If they want more training in stats, they can get it by taking our grad stat course.
6. No! This would in practice mean that the bulk of our students wouldn't learn about designing research in any particular way.
7. The yearlong course would end up being mostly stats, and the majority of students wouldn't take the lab.
8. Too much demand on resources for 400 level lab course. Use present 400 level labs, eg 420.
9. All students in psychology should be exposed to lab.

**Question 5: If you have any suggestions for improving the course or if there are any comments you would like to make, please record them below.**

Final Student Survey Responses

1. Get rid of lecture and have in-lab quizzes on the text.
2. Just too much work for one course. As a neuroscience major I also take Organic Chemistry and Physics. Timewise, Methods is most demanding (over-demanding).
3. More homework and discuss it; reading must be relevant, refer to it and maybe use examples; more frequent exams covering less material at a time.
4. Lectures and labs should be more integrated. I learned a lot more in lab and on my own than I did in lecture.
5. More individual attention, more time for assignments.
6. Allow students to do lab rewrites.
7. The lecture part seems insignificant because we don't deal directly with the learned material in labs. But integration of the two would be better.
8. Make it a year long course so students can do more labs.
9. I think it is a good idea to combine courses if the classes are small.
10. Overall, the Psychology major has such a wide range of options, it can be confusing if you're not sure of what you want. It just seems that things could be spelled out for undergrads: what it takes to get where, what that means realistically in terms of grades and experience. Even a flow chart wouldn't be bad. How much will I need Methods for in my future? I don't know.
11. Better lectures.
12. Improve TA's for lab sections.
13. My TA was wonderful, everything I learned in Methods was due to him. Thanks Frank!.
14. I need more feedback on my lab reports. I didn't know what I was doing wrong except for using wrong words. I think it would be good to have an overall overview. I don't know how certain things tie into each other.
15. Get rid of the lecture and focus on the lab.
16. Make the tests easier and fairer.
17. Too much work.
18. Exams should pertain more to topics discussed in lecture.
19. Integrate textbook into lectures. Lectures didn't serve much purpose and were pretty useless. The lecture, lab and text should go together.

20. Someone who can present the material in lecture more clearly is needed. This class requires much patience. Too much cannot be taught at once.
21. Good luck, I know I'd be lost.
22. Get rid of the Professor. Very nice man but very bad teacher. If not, them make Methods a lab course strictly. Theories and conceptual ideas can be taught in lab and applied when relevant.
23. Give non-graded exercises to accompany Stats concepts in Methods so as to improve the bridge between lecture and exam style.
24. TA Jeannie was extremely helpful in understanding the bulk of the class. Lab worth 75% makes TA more important than Professor.
25. I don't think that my lab report grades were appropriate considering how much time I put in or the quality of my work.
26. More TA's like Jeannie.
27. I think this should either be a six credit course or have less work involved.
28. In lecture, give all info during class so people would have to go to class. I would rather go to class than read boring chapters in a dry book. Drop the book.
29. The lecture was really confusing. I didn't understand much of what the Professor was talking about. I hated going but I did go. I think he should have focused on actual labs and research instead of Angela Davis. Also, he included a question on the first test that was way beyond the scope of the class. He shouldn't have. It was unfair. Ask him, he'll tell you.
30. Make clear the content of papers, what material should be in and where it should be.
31. No one went to lecture, make an incentive- make the tests worth more.
32. Labs not helpful, TA's not available for help.
33. Lecture did not seem all that significant although the Professor helped us whenever needed and provided us with useful information not related to lecture.
34. More computer lab hours available to students, including weekends. Some students commute or work full time etc. Also, smaller classes.
35. Tell TA's to help other students, not just their own students. Jeannie was the only helpful TA. Change lab (shorter) and lecture.
36. Most of the students just want to become practicing counseling psychologists. Only a small percent desire a career in experimental psychology. More time should be spent as consumers of research because that is what is necessary as practicing psychologists. Lectures must be made more interesting.

## ADDITIONAL FACULTY OPEN-ENDED QUESTIONS

**Question 4: Would Professors Benefit from Integrating Statistics and Methods in Psychology into a Year-long Course?**

Responses:

1. Only if it given time to develop the course.
2. It depends, I think so.
3. Who would teach it?
4. Would need extra resources.
5. Who knows? Depends on how it is arranged
6. Depends on the professor.

**Question 5: Would students benefit from such an arrangement?**

Responses:

1. I think so.
2. Definitely
3. Only if given time to develop the course.
4. Probably, but it depends on how it is arranged
5. Probably.

**Question 8: Describe what you think the goals of this course should be and share some thoughts about why these are important goals to achieve.**

Responses:

1. Students should be able to cope with and think about data, correlation, causation. Skills will be relevant to a wide array of modern careers.
2. Summarize the answers to #2-#75 (of this survey) - that should give a pretty good description.
3. Critical thinking and knowledge of experimental design and interpretation of research are paramount.
4. Sell students on the importance of scientific approach and the need to test ideas empirically. Then give them the chance to gather data, present it, and have their conclusions criticized.
5. Designing an independent study in a small group of students and carrying it out from start (literature review) to finish.

Some general comments that fit your questions 8-11:

My comments are predicated on the assumptions that we will have graduate TA's (or faculty!) teaching the individual lab sections, that these instructors will understand and value research, and that they will be comfortable enough thinking about research that they can help the students develop questions they actually care about answering and go on to help them design research to answer them. Under these assumptions, the ideal way to do a Methods course would be a year-long sequence, with a weekly lecture presenting statistics and theory, and a bi-weekly lab, lasting the whole year, devoted to stat exercises, research design, conducting research, and the like.

These assumptions are probably wrong. We will probably not have enough TA's; the ones we have will probably not be the strongest researchers; we will probably not have the lab space or the computer equipment necessary. If so, our choices seem to be to muddle along as we have been (not satisfying to much of anybody, except that when I taught the course and used the lab format Nancy Myers had developed together with TA's that she had trained), the lab sections were a uniformly positive experience for most of the students), or to go to an integrated course with greater emphasis on lectures.

I happen to think the latter would be a disaster for most our students (but see the second thought below). If it became a discussion of the abstract theory of research and data interpretation, most students will not understand what is being talked about, nor will they care. A very few will get the insights being expressed, but only a very few. At best, it would give students a better grounding in statistics (if they had ample time to apply statistics to more different sorts of problems that had some practical grounding). But it would probably deprive the majority of our students of the minor insight that statistics can have some value in understanding real data.

One slightly more positive view: One option some schools are taking is to have an elaborate canned set of computer-based research problems. If we had the computer facilities to allow 200 (say) students ample access to a PC for the whole year, and if someone were willing to devote a lot of time evaluating packages, and if it were possible to find packages that had a good mix of theory and interesting applications, and if it were possible to reduce the work done in individual lab sections by sloughing some of it off on the computers so that a TA could teach more lab sections than at present...etc., then it might be possible to design a year-long integrated Stat\Methods course with (say) bi-weekly lectures, weekly lab meetings, and extensive outside-class computer work.

**Question 9: What basic skills or knowledge should students have when the course is satisfactorily completed?**

Responses:

1. Understanding of the fundamental principles of science (the necessity for comparison); integrated sense of the relationship between science as a theory and as a practice.
2. Writing, statistical procedures, college skills (time management)
3. Critical thinking and knowledge of experimental design and interpretation of research are paramount.
4. Select good research designs; write in objective manner based on data; understand invalid reasoning involving research.
5. Ability to carry out independent research project.
6. How to design a simple multi-group experiment. How to collect and record data. How to analyze data from simple experiments and correlational studies. How to do naturalistic observation and collect data from such. How to design and analyze a survey.

**Question 10: How should these assessed?**

Responses:

1. Depends on resources available.
2. Faculty advising systems and thesis committees.
3. Sink or swim. Assume they have them (the skills), if they do not, they suffer. We cannot do everything to remedy Freshman English, statistics etc.
4. Oral and written presentations.

**Question 11: How well does the current curriculum achieve these goals?**

Responses:

1. Not very well
2. Extremely variable. Too much emphasis on lab reports in APA style. Form with no functional significance.
3. ?
4. Don't know.
5. Not at all. I have seen my best students (top GPA's in department and honors students) flail helplessly when confronted with the simplest analytic exercises in their own research. It's the unusual student who retains anything of valuc and most students are turned off by the experience of this course.
6. Don't know. Probably not well, based on my experience with honors theses.

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